MAGAZINE

approach

October 2000

ATASC 2000

Air-to-Air Safety Conference

approach

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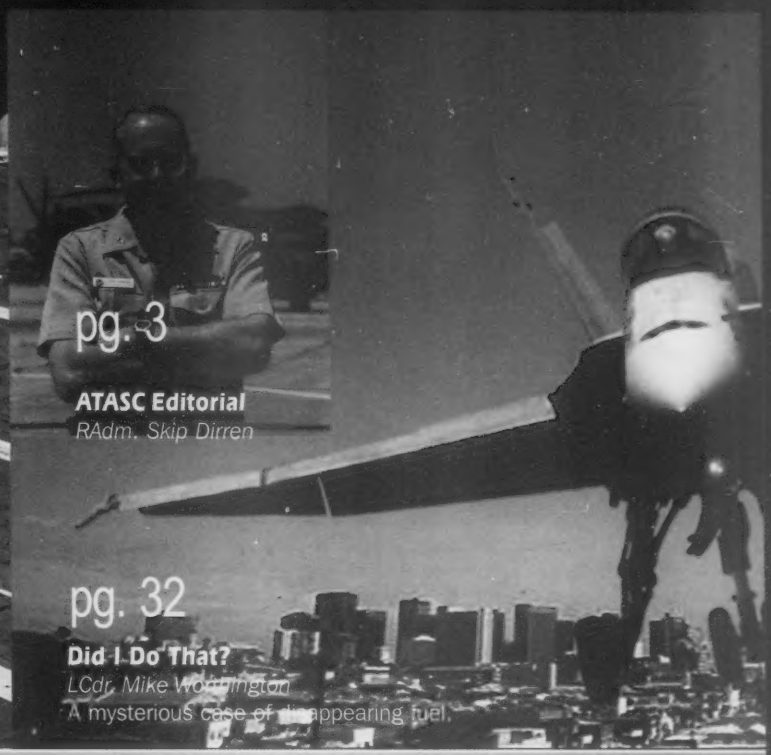
ATASC 2000



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Capt. John Leenhouts,USN
Photo composition by John W. Williams

letters

Re "Got to Pull the Pins," May 2000 *Approach*

I wanted to address the issue of why the back-seaters pull the two command-sequence gas-generator pins on the front seats as part of their pre-flight. The author of this article attributed it to the fact that if the front-seaters missed pulling those pins for some reason, it would disable the command-eject capability, leaving the pilot or ECMO 1 unable to get everyone out of the aircraft in an emergency. While this is true, it isn't why those pins need to be pulled first. The gas-generator mechanisms don't control the ejection-delay sequence of each seat as stated in the article; that task is handled by the ejection gun installed in each seat. Instead, they control the command-ejection process. When either of the two front-seaters initiate ejection (with the command-eject handle in the ECMO position), the gas generator routes gas (via the pilot's seat) to all the other seats, commanding their ejection guns to fire.

If one of the front-seat ejection sequences has somehow been triggered, nothing will happen with all the seat pins installed. By pulling the gas-generator pins first, you would see the system activate (as the plunger retracts into the mechanism) and know not to pull any other pins. Once one of the sequencers activates, it commands all four ejection guns to fire and the only thing preventing them are the ejection-gun pins. Imagine what would happen if the pilot or ECMO 1 pulled their seat pins—including their respective gas generator pins—**after** the back-seaters had pulled theirs and were in some stage of entering the cockpit or strapping in. An ejection from an EA-6B prior to being strapped in with the canopy fully closed would surely be fatal.

This is not just an SOP or to make sure the front-seaters pull their pins, it is a vital safety step in the preflight and man-up procedures for the egress system in the EA-6B. It is also NATOPS procedure: "WARNING—Do not remove seat safety pins until pilot's, and if applicable, ECMO 1's seat is checked and sequence initiator safety pin is removed."

LCdr. Joel Paine, Officer in Charge, VAQ-129 SAU

I have fully enjoyed *Approach* during my 18 years in the Navy, and I look forward to each issue with great anticipation. My compliments to you and your staff, and especially to the people without whom the magazine would not be possible, the authors.

I have a small request. An Aviation Support Equipment Technician, I don't work on aircraft, but on the numerous pieces of support equipment required to maintain them. I'm also an avid aviation fan, and have been since my youngest memories of growing up the son of an Air Force master sergeant. Can you provide a list of explanations of the acronyms used by the naval aviators? It took me years to figure out what NORDO was, until, by coincidence, one contributor explained it in his article (NORaDiO). Years ago, I figured out "VFR" and "IFR" when I was working on my Enlisted Aviation Warfare Specialist qualification, and I have been able to puzzle together others on my own. Perhaps you could include a small section devoted to explaining the 100 most common acronyms. Your audience isn't just aviators, but the entire aviation Navy, and, I'm sure, some non-aviation types. Like me, I'm sure they would like to be ITK ("In The Know").

AS1(AW) Darrell Dowd

We've had similar requests in the past, but your timing is better. We have just published such a list on our web site, and will add to it as words occur. If you or other readers have any puzzlers from current or past articles, let us know.–Ed.

Can you send me a copy of an article that was entitled "Eine Kleine Nachtflugen"? It is a great article and may be ripe for republishing. Anybody who has flown around the ship day or night will appreciate the humor.

Incidentally, I sometimes think the benefits of *Approach* are underrated. I personally know of three people (me included) who aren't in Davy Jones' locker because of something they read in your great magazine.

LCdr. Mark "Max" Anderson

A copy is on the way. Incidentally, we are posting an index to our entire 50-year archive on the web site, and we'll be happy to send copies of published articles to interested readers, assuming that you know which article you want. Please don't forward requests on the order of "I think it was in the 1970s, and it was on a left-hand page in the middle." You'll have to visit in person to locate those.–Ed.

From the editor

***Articles**: After a couple months back in the trenches as acting editor, I continue to be elated with the quality and number of articles flowing into my mailboxes, both physical and electronic. EA-6B and E-2*

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ATASC Editorial

ATASC 2000

Everyone in the military—and aviation, in particular—knows that the magic word today is "interoperability." You can expect that during your next deployment, you will operate with or conduct an exercise with another U.S. service or foreign nation. Some of you have been to Aviano, and in WestPac, where we quite often operate out of airfields in other countries. A special section in this month's magazine highlights some of the problems that can crop up when you are assigned to or operate with someone other than the Navy or Marine Corps.

Because communication ensures coordination, the seventh U.S.-Israel Air to Air Safety Conference (ATASC) convenes during the week of Nov. 13, 2000. Representatives from the United States Air Force, Navy, Army, Marine Corps, Coast Guard and the Israeli Air Force will exchange safety information, review new technologies, analyze human factors and discuss mishap-investigation procedures.

The first ATASC was held in Israel in the spring of 1991, with follow-on conferences hosted every 18 months by one of our service safety centers. From the beginning, the conference has expanded from basic information exchanges to opportunities to discuss how to improve operational readiness and joint and combined operations. The conference has also given us the chance to develop professional relationships that foster a global approach to risk management and hazard awareness. Because of rapid changes in technology and the global-security environment, ATASC 7 promises to be an exciting and meaningful forum.

Past meetings have set a high standard, with lively and interesting seminars. The four venues—mishap investigation, human factors, operations and maintenance, and ground safety—run simultaneously, making it hard to decide which session to attend. Here are some of the topics planned for this year's conference: crew coordination for maintainers, ORM training systems, methods for enhancing the video used for mishap investigations, use of digital data in debrief and post-flight training, midair-avoidance systems for tactical aircraft, and avoiding aircrew fatigue.

This year, along with the staffs of the service safety centers, we've invited wing and unit safety officers to participate. I feel sure this year's meeting will produce thought-provoking ideas that will help us continue to improve our ability to fight and win our nation's battles with the minimum loss of lives and assets.

RAdm. Skip Dirren

Our Ships, Ever

Part I: Bringing the Players T

by Cdr. Bret Gary and Bob Giffin

Recent history has shown that Army, Air Force, and Marine Corps aircraft must operate from Navy ships. Helicopters from services other than the Navy or Marine Corps have markedly increased their shipboard operations aboard Navy, Military Sealift Command, and Coast Guard ships.

One result is the Joint Shipboard Helicopter Integration Process, or J-SHIP. The Office of the Secretary of Defense chartered the process in July 1998 as a four-year Joint Test and Evaluation program. Various Unified CinCs, service commands, and DoD operational, acquisition, and testing communities support the program and its goals. The Navy has the lead; Army and Air Force test resources and personnel are also part of the joint test force.

Recently, one of the authors (Bob Giffin) was aboard USS *Essex* (LHD 2) and USS *Constellation* (CV 64) in support of J-SHIP. Here are some lessons learned to date.

"Shipboard helo ops? That can't happen to us." That's what members of the 4/2 ACR, 10th Mountain Division, and 159th Aviation Regiment said before they found themselves heading to Haiti on board Navy ships. For those who have never experienced shipboard helicopter operations, it's a rude awakening. Seasickness will definitely interfere with accomplishing the mission, and shipboard operations pose many hazards foreign to Army aviation.

You can minimize these risks through planning, training and being aware of the hazards. If your unit has an over-water, mission-essential task list (METL), make *Shipboard Helicopter Operations* (FM 1-564) part of your training. J-SHIP is helping enhance the information in *FM 1-564* through a series of 12 Dedicated At-Sea Tests (DAST) of various ship-helicopter combinations over the next few years. The results will be posted on a web site, *www.jship.org* and available on a CD, which will provide one-stop shopping for everything you need to know to deploy and operate successfully aboard ship.

Water-survival training is a must, and it isn't a

A UH-60 flown by the Texas National Guard leaves the flight deck of USS *Constellation* (CV 64). These aviators were helping research how to train helo pilots from all services for shipboard operations.

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cakewalk. Just ask some of the Army aviators who recently failed to pass the training for J-SHIP's third DAST on USS *Constellation*. Not only will you need to be trained, but your unit will need to procure water wings and HEEDS (Helicopter Emergency Egress Deployment System) bottles for underwater escapes.

Army aviators learn Navy landing signals before taking off from USS *Constellation*.

The electromagnetic interference (EMI) aboard ship is intense. High-power emitters are less than 100 meters from your maintenance and staging areas. Each of these emitters has differing effects on helicopter ordnance, communications and electronics, affecting such safety-of-flight systems as hydraulic controls, AFCS and radar altimeters.

Just one rocket or missile that accidentally explodes because of a ship's high-power emitter or because it is overheated can ruin your whole day. That's what happened on board the USS *Forrestal* (CVA 59) in July 1967 in the Gulf of Tonkin. A missile ignited a fire that burned for three days and claimed 132 lives. The Navy now has the HERO program (Hazards of Electromagnetic Radiation to Ordnance) to reduce the radiation risk. J-SHIP plans to provide descriptions of all known EMI and HERO hazards on the web site so you won't have to dig them out of old test reports and try to interpret how field strengths of certain frequencies affect various electronic systems and ordnance.

These are just a few things to think about when the word comes down that your next mission is to go aboard a Navy ship. And if you have any interesting safety-related experiences on a Navy ship, send your sea stories to *garybc@navair.navy.mil*, and we'll share the lessons learned.

Things to consider (available at www.jship.org):

- FM 1-564, Helicopter Shipboard Operations
- Joint Pub 3-04.1, Joint Shipboard Helicopter Operations (JTTP)
- Army-Air Force Deck Landing Operations (Joint MOU)
- Helicopter emergency-egress "dunker" training
- Navy water-survival training
- HEEDS training

Part II: J-SHIP Tests Rapid Helo Re-Arming on USS Essex

Looking for ways to re-arm helos more quickly, Army personnel tube-load 2.75-inch rockets onto an Army helo aboard USS *Essex*.

Rockets on target, on time—that's what our ground forces expect, and J-SHIP intends to deliver. Recently the J-SHIP JTF deployed aboard USS *Essex* (an amphibious assault ship, LHD 2) to investigate how to better operate Army and Special Operations Forces (SOF) helicopters on Navy ships.

One of the main goals of this six-day, at-sea event was to study how to rapidly re-arm Army helicopters. The key differences between Army and Navy re-arming procedures include individual tube-loading rocket pods and re-arming "hot" (while the rotor blades are turning). The test was conducted by tube loading inert ammunition (2.75-inch aerial rockets with warheads) using helicopters from the United States Army Special Operations Command (USASOC). This method may prove to be faster and just as safe as the current Navy-Marine Corps method of pod loading.

LtCol. Bud Sauvageau, JSHIP's Air Force Deputy Director and former Special Operations Forces Air Planner, explains, "The Special Operations Forces routinely conduct tube loading in the field at their FAARP [Forward Area Arming and Refueling Point] as an absolute operational mission requirement. Lost minutes re-arming can mean lost lives in the battle."

Tube-loading also produces more accurate rockets by keeping the rocket-pod boresight aligned. However, this procedure involves greater risk management aboard ship. Factors such as the intense electromagnetic fields produced by shipboard emitters require special consideration.

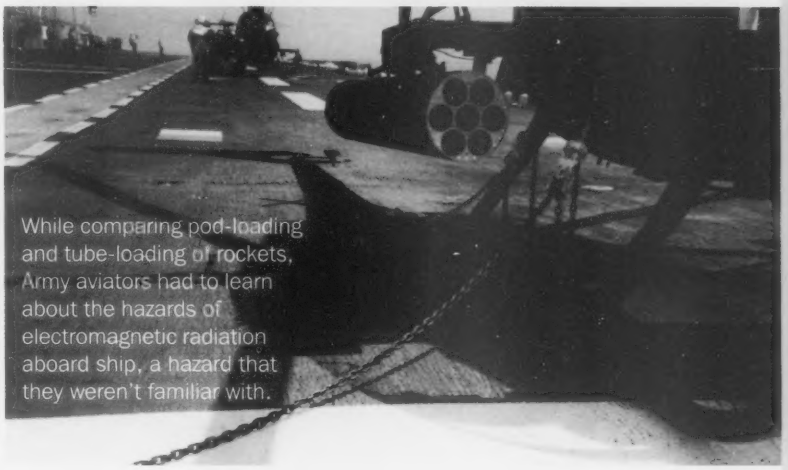
The Navy's Hazards of Electromagnetic Radiation to Ordnance (HERO) program includes procedures and safeguards that must be followed aboard ship to keep aircraft weapons from inadvertently firing and ordnance from exploding. LtCol. Thomas McDaniel, J-SHIP's Army Deputy Director and Naval Test Pilot School graduate, said, "This precaution is especially necessary since you cannot see, feel or smell the intense electromagnetic fields produced by shipboard systems."

Most army aviators are not attuned to this hazard because they seldom fly from ships. But when they do—and they will—the last thing a helicopter pilot needs is to accidentally activate his onboard flight and weapon systems, or to completely fry those systems.

The Navy's HERO program of necessity sets much more stringent restrictions than the Army has to consider in the field. Procedures were investigated, developed, and tested on the SOF helos (with rotors turning) to safely handle HERO-susceptible ordnance during tube-loading exercises. The Navy and Marine Corps use pod-loading instead of tube-loading because pods protect against radar hazards and heat. AO1 Michael Haines from the office of the Aviation Ordnance Safety Supervisor

(AOSS), at Naval Surface Force, Atlantic, took part in the test as one of three aviation-ordnance safety advisors. AO1 Haines has been working for the past three years exclusively with Army helicopters during joint deployments and exercises, helping them operate safely on Navy ships.

AO1 Haines said, "No matter how good the Army guys are, they just don't know all the hazards that could bite them when they operate off Navy ships at sea because they spend very little of their time at sea. I believe J-SHIP will help not only other services understand how to operate safely on ships, but it will also help the Navy understand how to operate safely with the other services."



While comparing pod-loading and tube-loading of rockets, Army aviators had to learn about the hazards of electromagnetic radiation aboard ship, a hazard that they weren't familiar with.

Bob Giffin also embarked for the J-SHIP test as an overall safety observer and advisor. He said, "By bringing out an AOSS team member out for the J-SHIP test, they were able to cover all the bases—and do it safely—in testing new aviation-ordnance handling procedures. I was very pleased with the skills of *Essex's* flight-deck and ordnance-handling crew, the SOF helicopter detachment, and the J-SHIP team. I believe safety officers need to get out and turn over rocks to find problems and fix them, and that is what we did on this test."

The J-SHIP test validated the following major safeguards:

- Transport the rockets to the aircraft in a 7-shot and/or 19-shot pod whose ends are covered with barrier shields. The pod provides a HERO-safe environment for the rockets.
- Complete a loading checklist to prepare the aircraft.
- Ground the aircraft and the rocket pod.
- Transfer one rocket at a time from the thermally protected pod to the pod mounted on the aircraft using a HERO-safe protective sleeve to cover the rocket motor when not in the pod.
- Download unexpended ordnance the same way.

Rockets were also loaded "hot" (engines running and rotor blades turning) during the test. The procedures used were very similar to the "cold" re-arming procedures with added precautions to ensure safe operations, and since the pilots didn't have to shut down and restart engines, the "hot" operations were much faster. The added complexity of turning rotors required clearly defined procedures, comprehensive briefings, and a team effort between the air department, flight-deck crew, ship's ordnance handlers, aircrews, crew chiefs, and helicopter ordnance personnel.

If these procedures are adopted, they will certainly create safer and quicker reloading without misaligning or having to re-boresight the rocket pods.

A number of related issues must be investigated before making a final recommendation. J-SHIP is developing follow-on tests to certify tube-loading for SOF helos. Cdr. Bret Gary, J-SHIP's Navy Deputy Director, said, "J-SHIP is excited about testing this capability. We believe that new, more efficient ways of operating jointly are possible and are just as safe. That's what J-SHIP is all about—helping the warfighter."

Cdr. Gary is deputy test director for J-SHIP. Mr. Giffin, a retired Army CW4, is systems safety manager at USASOC.

Photo composite by Pat Eaton and Allen Amen

"Brake

by Lt. Jeremy Neuner

I hadn't landed on a small-boy since the FRS, so I was eager to try my hand at getting aboard a Canadian frigate. The senior JOs grumbled that this hop ought to be added to the growing list of unwarranted privileges extended to the new guy, and I felt like I was finally getting one of those legendary "good deals."

The plan was to land on the Canadian frigate and drop off a couple of much-needed parts for their embarked H-3. To show their appreciation, the Canadians agreed to let us use their accompanying destroyer so we could update our small-deck quals. The skipper decided to ride along in the back and swap out with me so he could get DLQs as well.

In the brief, we dutifully pulled out the HOSTAC, familiarizing ourselves with the layout of both decks. The weather promised some open-ocean swells, so we also checked NATOPS for our pitch and roll landing limits. Satisfied that all the pub-punching they make you do in flight school really does have a use in the fleet, we manned up and launched.

I was in the left seat and had the controls during most of the transit. Once we were in radio comms with the ship, the HAC took the controls so I could do landing checks. During shipboard ops, the checklist says to set parking brakes. I pushed on the pedals, reached cross-cockpit over the center console, and pulled up the handle to set the brakes.

I took the controls back and the HAC copied down the ship's pitch and roll numbers, which were barely in limits. The adrenaline began pumping as I got a green deck and set up for my first approach. Distant winter storms had kicked up the sea state, and we could tell the deck was really moving. We wondered if the pitch and roll numbers were within limits, but decided to press on. The HAC told me to wave off any time I felt

kes! Brakes! Brakes!"

uncomfortable. In close, we realized that the deck was moving around much more than we were comfortable with. As briefed, I called a waveoff, taking it around as we double-checked the numbers.

We didn't want to give up that easily. The HAC took the controls and decided to make a low pass so we could get a closer look at exactly how much this unfamiliar deck was pitching. We also wanted the aircrewmen and the skipper, who was riding in back, to get a look so they could add their two cents to the decision-making process. As we flew our low pass, we could see some swells spilling over the flight deck, covering it with a slick coat of salt water. The skipper thought getting aboard the wet, pitching deck would be hard but not unsafe, saying we could continue at the HAC's discretion. We checked with the ship one more time, making sure their numbers were still in limits. Satisfied, the HAC set up for an approach. The landing was challenging, but we made it aboard. The Canadian deck crew chocked and chained the helicopter, we transferred the parts, and signaled for breakdown.

While we waited for breakdown, the deck started violently rolling and pitching. We could feel the landing-gear struts compress as the ship hit some heavy swells and pitched wildly. Once the deck crew removed the chains, the deck went amber, and we continued to ride the roller coaster, my comfort level rapidly deteriorating. Again, the ship hit another monster swell, and the nose of the helicopter dipped as we felt the struts compress even more. But this time, the nose kept moving. We were rolling forward! The skipper and the crewmen in the back shouted, "Brakes! Brakes! Brakes!" as the scant margin between our rotor blades and the ship's hangar bay rapidly decreased. With the deck still amber, the HAC stomped on the brakes, added aft cyclic, pulled an armful of collective and lifted off. Our rotor blades came within inches of hitting the hangar.

As we climbed back into the pattern and caught our breath, the Canadians came over the radio and politely asked if our helicopter was equipped with parking brakes. Sheepishly, we replied, "Yes." But clearly those brakes weren't strong enough to keep our 20,000-pound helicopter firmly planted on a wet, wildly pitching deck. The Canadians thanked us for the parts, and we flew to their sister destroyer for some uneventful bounces.

We could feel the landing-gear struts compress as the ship hit some heavy swells and pitched wildly.

We debriefed the flight back on the beach and discussed what had gone wrong. Maybe setting the brake cross-cockpit kept it from working properly. Maybe the wheels had simply slipped on the wet, slick, pitching deck. Maybe we hadn't communicated clearly with the Canadians about the pitch and roll limits (they kept ending their radio transmissions with "Eh?"). We also discussed how good crew coordination and ORM saved us. We had decided to press ahead with a challenging flight. But every member of the crew—including the skipper, who was "just along for the ride" in back—had a chance to evaluate the situation. And when the situation became dicey, every crewmember's SA was especially high, particularly the HAC's, whose quickness at the controls prevented a certain mishap.

Even when you think you're doing everything right, little things can still reach out and bite you.

Lt. Neuner flies with HS-2

A Harrier in the

by Maj. Chris Parkhurst

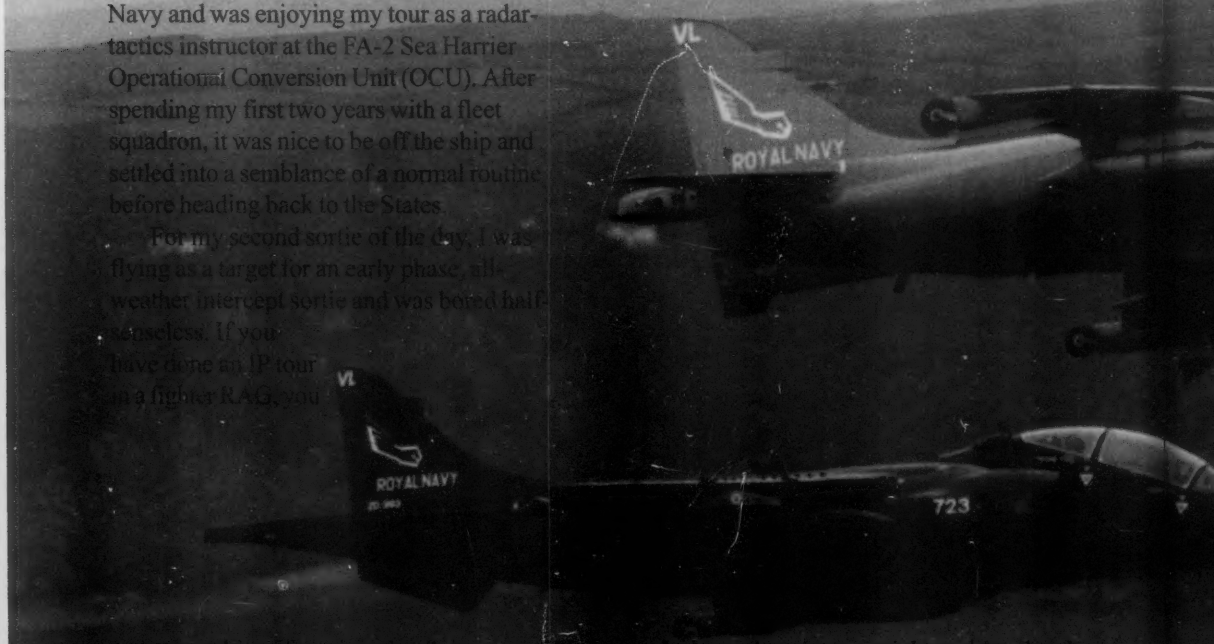
Another beautiful spring day in southern England: 1,000 feet OVC, tops at about 4,000 feet and CAVU above. Not much chance of seeing the sun unless you're a pilot.

I was nearing the end of a fantastic three years as an exchange pilot with the Royal Navy and was enjoying my tour as a radar-tactics instructor at the FA-2 Sea Harrier Operational Conversion Unit (OCU). After spending my first two years with a fleet squadron, it was nice to be off the ship and settled into a semblance of a normal routine before heading back to the States.

For my second sortie of the day, I was flying as a target for an early phase, all-weather intercept sortie and was bored half senseless. If you have done an IP tour in a fighter RAG, you can sympathize. If not, imagine flying your fifth or sixth instructional-instrument sortie for the week, and you will get the picture. Your student is trying to eradicate the snakes from his cockpit, and you are ready to roll inverted and pull!

Having developed a more creative attitude toward training and the progressive envelope expansion that accompanies it—traits held dear by our Anglo cousins across the Atlantic—I was thinking hard of some way to occupy my time besides flying straight-and-level and taking notes.

On my second or third outbound split, I thought, "I wonder if I can fly this thing without touching the stick?" The Harrier—particularly the Sea Harrier—is a naturally unstable platform in flight and requires constant stick-and-rudder attention. Thus, flying it sans control stick would be interesting.



I trimmed my jet to straight-and-level and began flying my next turn inbound using rudders, control nozzles and power only. It wasn't pretty, but I could fly the remainder of the sortie without the stick.

"Another useless bar trick mastered," I thought. "My mom would be proud!"

Several weeks later, same weather and I got a great deal: leading a two-ship instructional-BFM sortie for one of the students going through the Air Warfare Instructor Course (Navy version of WTI/SFTI). The sortie was a standardization hop, and all players involved

...e Bristol Channel?

were full-up rounds. This was going to be great! We were ready for 45 minutes of sheer fun before heading back to the wardroom for "tea and medals."

Setting up for the next-to-last visual split of an otherwise uneventful sortie, I suddenly found myself 15 degrees nose down, left wing down with a frozen control stick.

"This is not good," I thought.

After calling, "Knock it off," and declaring an emergency, I spent the next couple of seconds with my head on the dashboard [illegible] NATOPS. No luck there. Cockpit indications normal, hydraulic and stab switches off, stick won't move. Time to get out.

As I reached for the yellow-and-black-striped handle, it suddenly occurred to me that I had seen this before. Ah, yes, the intercept sortie a few weeks ago. Eleven thousand feet between my pink body and terra firma. Full, right-rudder to wings level. Reduce power and ratchet nozzles downward. Add power to help nose up, and I was straight-and-level. But the stick was still frozen.

"Freddy," I called the GCI controller, "give me a steer and range to the nearest coast." At least the Navy won't have to explain why one of their jets wiped out an entire village.

Gingerly steering for the Bristol Channel, I continued to troubleshoot my cockpit and prepare for what seemed an inevitable bailout, while my wingman joined for a visual inspection. Finding nothing obvious, he continued to provide me with calm, measured advice to ensure we had our bases covered and hadn't missed any possibilities.

I thought, "This is hopeless. I've got two more minutes to feet wet, then I'm stepping out before this thing goes south."

I gave another Herculean tug on the control stick, and it was free in pitch. What a morale booster that was. Maybe I could get this thing home after all. My wingman, having had a similar experience [illegible] with [illegible] SAM [illegible]

[illegible]

tried lowering the flaps [illegible] about the size of an F-14 tailplane, [illegible] tional approach speeds tend to be [illegible] without full flaps. Again, ready for the worst, I lowered my flaps to full.

"Flaps are full, and I'm on speed," I called.

Having achieved a landing configuration we now began to discuss the possibility of actually landing the jet with the stick still frozen in the roll axis. I had been flying in this condition for more than 15 minutes now, gotten the gear and flaps down, and flown on-speed.

continued on page 25

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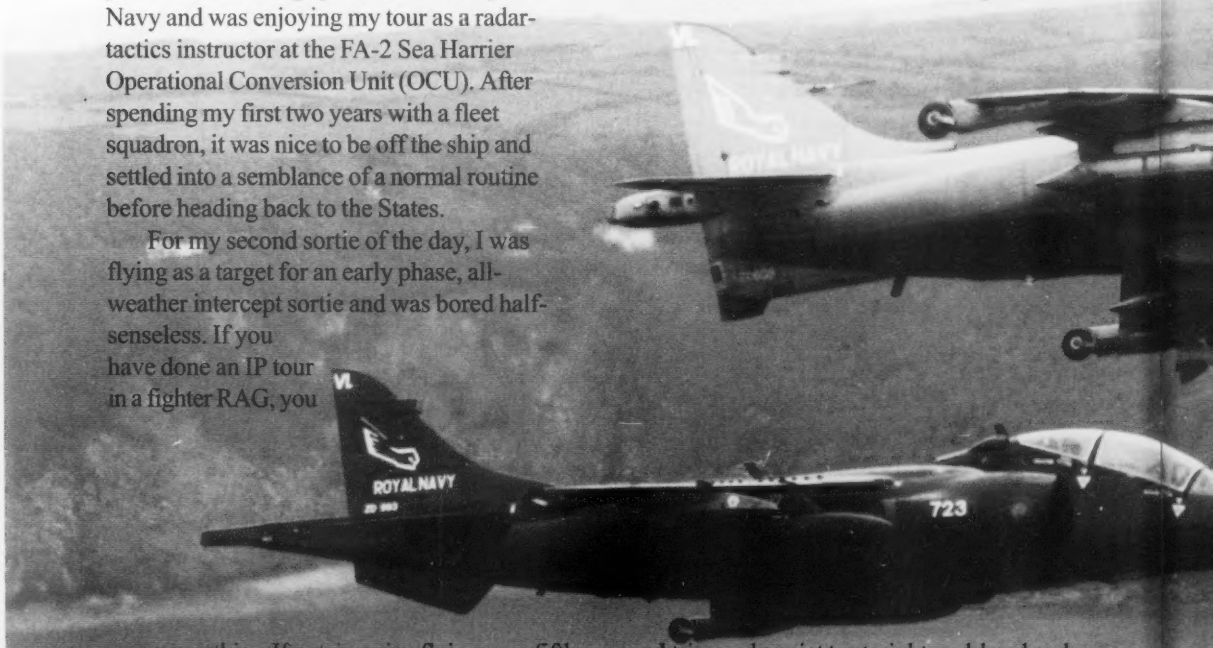

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I gave another Herculean tug on the control stick, and it was free in pitch. What a morale booster that was. Maybe I could get this thing home after all. My wingman, having had a similar experience, continued to assist my troubleshooting effort with sage advice while coordinating a SAR effort. We discussed the possibility of a level transition and how to do it. I was still unhappy about my prospects for recovery but figured I really had nothing to lose.

My wingman offered, "Try to lower your gear." I was feet wet, ready to punch.

"All down-and-locked," I replied. Then, I tried lowering the flaps. The FA-2 has a wing about the size of an F-14 tailplane, so conventional approach speeds tend to be horrific without full flaps. Again, ready for the worst, I lowered my flaps to full.

"Flaps are full, and I'm on speed," I called.

Having achieved a landing configuration, we now began to discuss the possibility of actually landing the jet with the stick still frozen in the roll axis. I had been flying in this condition for more than 15 minutes now, gotten the gear and flaps down, and flown on-speed.

continued on page 25

The Wingm

by LCdr. Adrian Orchard, Royal Navy

How often do we pay lip service to drills and procedures? How many of us believe that, outside the simulator, we will actually have to react to a fire or a hydraulics failure? How many of us believe we will have to help another aviator who has had a serious mishap? Most of our training in emergency procedures is done from the perspective of our own aircraft. What would you do if your wingman or an aircraft from outside your flight declared an emergency?

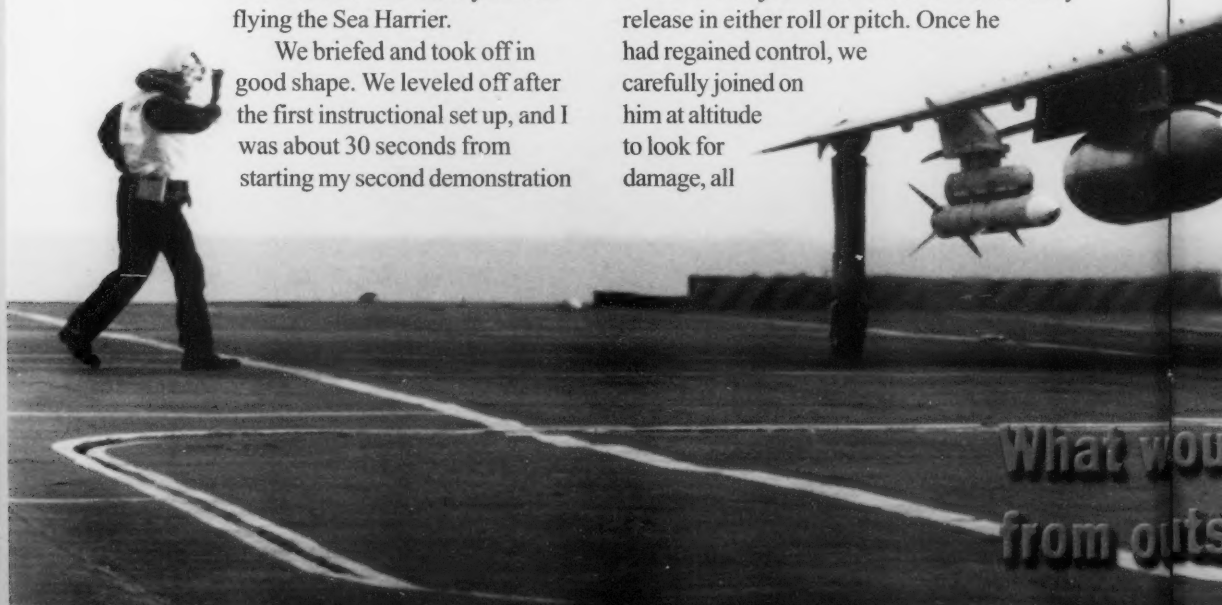
The situation I found myself in certainly took me by surprise. I'm an air-warfare instructor (AWI, similar to a SFTI/WTI in your Navy or Marine Corps) in the Royal Navy. My task one pleasant day in May was to teach a student AWI how to teach air-combat techniques to FRS student pilots.

The flight consisted of myself and the student AWI in a two-seat Harrier. My "target" pilot, in a single-seater, was Maj. Chris Parkhurst, a Marine exchange pilot in his final weeks of his three-year tour flying the Sea Harrier.

We briefed and took off in good shape. We leveled off after the first instructional set up, and I was about 30 seconds from starting my second demonstration for the student when Chris reported a problem. His controls were jammed, he had a total hydraulics failure, and he couldn't control his aircraft. We saw him in what we guessed was a 15-degree dive, going down at an alarming speed.

I had experienced a control freeze in the Harrier a year earlier. I told my student to get out his NATOPS procedures and monitor me whilst I went through all the drills I could think of that could be related to the control problem, all the while knowing that Chris was trying to fly the aircraft with secondary flight controls (power and the nozzle-control lever).

Besides trying to point him in the right direction for the airfield and tell ATC and the SAR effort of a potential ejection in the Bristol Channel to the north of our position, I tried to get more information from Chris. It became clear that it wasn't a clear-cut hydraulics failure, as the gauge was reading erratically without the associated warning or caution. The controls were jammed but would momentarily release in either roll or pitch. Once he had regained control, we carefully joined on him at altitude to look for damage, all



man's Tale

the time trying to troubleshoot.

With no visual damage and an aircraft that we collectively agreed could be flown, I started to shepherd Chris to the blueprint approach that I did for my frozen-control flight a year earlier. I wanted to get him to about 10 miles on the extended centerline of the active runway, let him line up and have at least two minutes of straight path to use his mix of primary and secondary flying controls for his approach.

For this whole period, my aim was to try to get Chris to believe the aircraft could be landed and that he should worry about nothing but flying the aircraft. My final concern—which I didn't need to get across to Chris—was that I wouldn't hesitate in calling for him to eject if I felt he couldn't recover the aircraft from its frequent, but so-far surmountable, control freezes.

As we got closer to the airfield, my commentary continued until Chris reported having the field in sight and didn't need me talking anymore.

With large amounts of skill and brute force, Chris put the aircraft down and saved a very expensive piece of Her Majesty's ironware, all of this in a situation where he would have been justified in bailing out.

As a wingman, I felt I had worked as best I could trying to troubleshoot whilst trying to make sure all the domestic bases had been covered. It would have been very sad to have Chris flame out on final because I hadn't ascertained his fuel state!

This flight taught me there is just as much chance of being intimately involved in someone else's major emergency as my own. I've experienced several airborne incidents, but the complexity of this one challenged me in terms of what to say and when to shut up. We don't get formal training in a setup like this one.

LCdr. Orchard is now on an exchange tour with VX-9

t would you do if your wingman or an aircraft outside your flight declared an emergency?

A Collision a
Change After

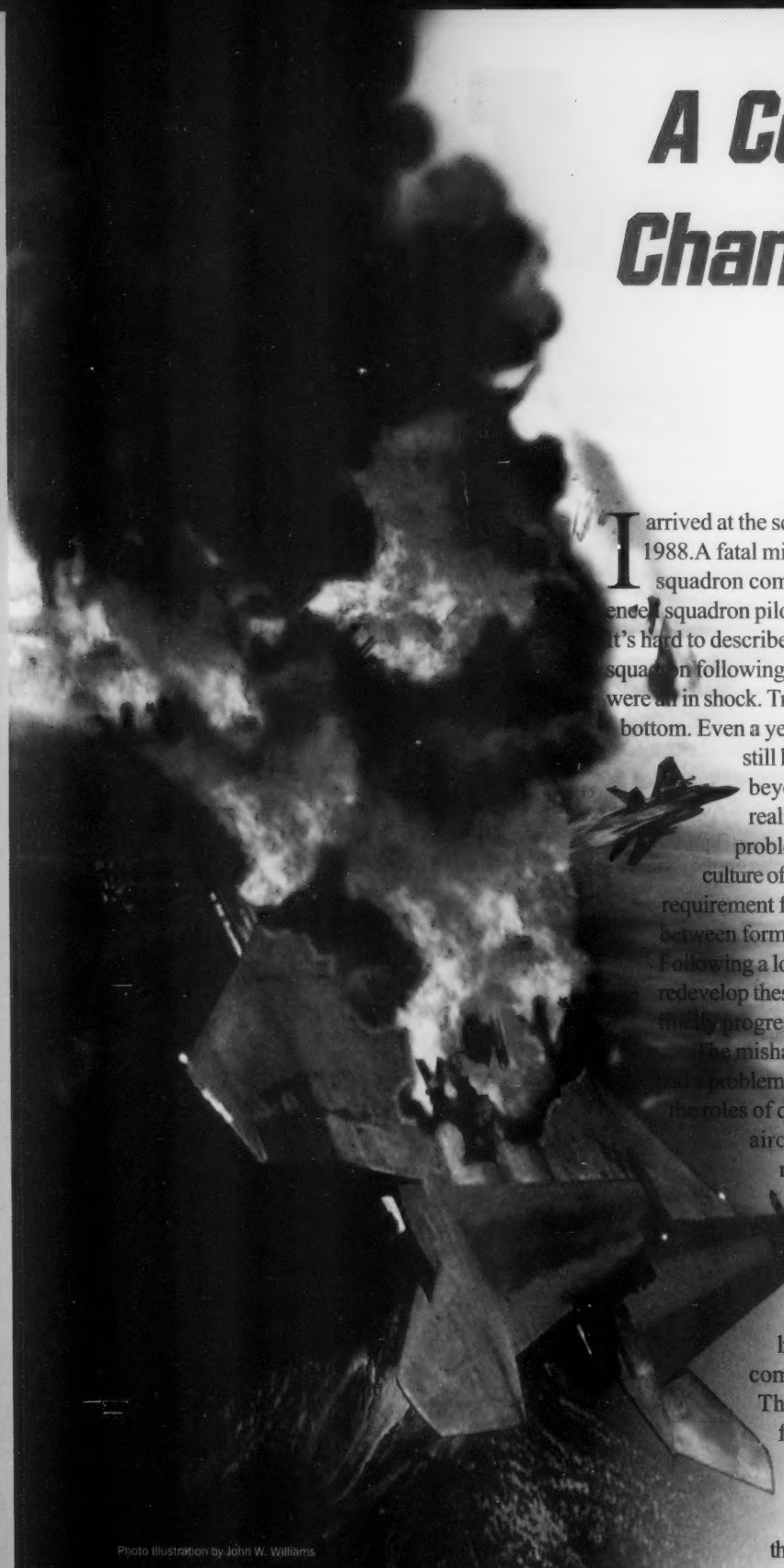


Photo Illustration by John W. Williams

I arrived at the squadron in the middle of 1988. A fatal midair involving the squadron commander and an experienced squadron pilot occurred soon after. It's hard to describe the blow absorbed by a squadron following this type of event. We were all in shock. Training complexity hit bottom. Even a year after the collision, we still hadn't progressed beyond 1 v 2 ACM. We realized that the main problem stemmed from a culture of disregarding "visual" (the requirement for periodic eye contact between formation members) rules. Following a lot of work with BFMs to redevelop these "visual" skills, we finally progressed to 2 v 2s.

The mishap taught us all that we had a problem in ACM with defining the roles of defender and aggressor aircraft. Prior to the midair, each group fought the other with the same intensity and level of aggressiveness. Both defenders and aggressors fought like IAF aviators. The competition was fierce. This led to brutal dogfights between top-notch pilots, inevitably producing safety infractions throughout the fight, from the merge through the

n and Its Effects: Cultural
ter an F-15 Midair

intercept. It was time for a cultural change among those simulating enemy aircraft.

We developed the concept of "reds" vs. "blues." The "reds" were instructed to exhibit levels of training and proficiency that were appropriate for the type of threat they simulated. This was a substantial change, and squadron pilots found it hard to internalize. Flight leaders had a hard time ridding themselves of the old mock-enemy mentality. We finally reached a point where we understood that only mature and experienced pilots at the squadron command or second-in-command level could appropriately simulate enemy aircraft without getting carried away. Later on, there was a period when we required "red" leads to be at least seconds-in-command or senior flight leaders.

At a more basic level, new ACM ROEs were framed. These included keeping the TD Box out of the center of the HUD when closing to certain ranges, and prohibiting close, high-speed, head-on passes. Veteran pilots can recall hair-raising passes at closure rates in excess of Mach 2.5. This doesn't happen anymore.

Today, it's hard to fathom how, until 1988, we lived with 1 to 2 midair collisions every year. We wanted to be operationally ready at the highest level of proficiency. This encouraged dangerous inter- and intra-squadron rivalries that were played out in the air. The F-15/F-15 midair gave us a much-needed wake-up call. It was more than just a severe mishap, more than just a typical fatal training accident.

Everyone asked himself: how can we stop a phenomenon that killed our best pilots in our best aircraft? The IAF decided to deal with it. Now, 12 years later, the results are evident. One year after the F-15 midair, a pair of A-4s collided. This could be attributed to remnants of the previous flight culture. Since 1989, we've only suffered one midair (in 1995). This is a significant accomplishment, one that has us asking ourselves: where were we before 1988?

These are hard-won statistics. There are those who claim that, as a result of the change in flight culture, we're less operationally ready for air-to-air missions, and that the lives saved in training will be grimly reaped in combat. Yet, even if this proves true, it is precisely the point: we're preserving our assets for wartime. This is especially so when most of our flight time and missions are conducted during peacetime.

As one who's lived through the transition in flight cultures, and who can appreciate the changes we've undergone in recent years, I ask myself if we're indeed less qualified today than we were then. What I've learned is that today's aviators are no less skilled, and the price we paid then was terribly high and unnecessary. If we still pay a certain price, it is in a more negotiable currency—time—by prolonging the period of training required to reach operational readiness.

It's accurate to say we thought our previous flight culture would increase our proficiency. Instead, it led to mishaps and a decline in skill. On the other hand, through adopting a more mature flight culture and moderation, we have achieved ever-higher levels of operational readiness.

[There are two keys to mishap-free ACM training. First, understanding and complying with the ACM training rules in OPNAV 3710 and squadron SOPs. Second, applying the tools of operational risk management. These two things will greatly reduce the potential for midair collisions. — Ed.]

Too Bad

by Cdr. Neil May

The memories from that night are the most vivid and frightening of my career. It was a cold, rainy night, dark as a sack of coal. The sea state was whatever number is bad on board USS *John F. Kennedy*. It was my first cruise. I was a fledgling LSO who had just relinquished the pickle when a Tomcat showed up, in the chute. He called the ball, and even though I was a novice, I could tell he was way high and lined up left. Calls were coming from the LSO. The aircraft passed the ramp coming down smoothly but with a tremendous left-to-right drift. Every LSO on the platform slowly turned in unison as the Tomcat passed. We watched it land long, past the wires, in the glare of the waveoff lights.

A KA-6 tanker was spotted on the crotch with a plane captain standing in the cockpit, wiping down the windscreen. The plane captain saw the Tomcat coming right for him and jumped to the flight deck as the tanker took the full impact of the Tomcat's right wing. Time stood still, then progressed in super slow motion. Immediately I felt intense heat from a massive fireball and watched the plane captain outrun the leading edge of the inferno inches behind him. (I later learned he had broken both heels from the fall.)

I saw the RIO's seat fire at the end of the angle as the burning plane left the flight deck. The seat rockets propelled him at a sixty degree angle-of-bank, blasting him over parked aircraft and into the blackness off the starboard side. The flaming Tomcat snap-rolled right off the angle and plummeted into the sea. I never saw the same brilliant flames from the pilot's ejection seat, so figured he was a goner. It was the first time I had ever seen someone apparently die.

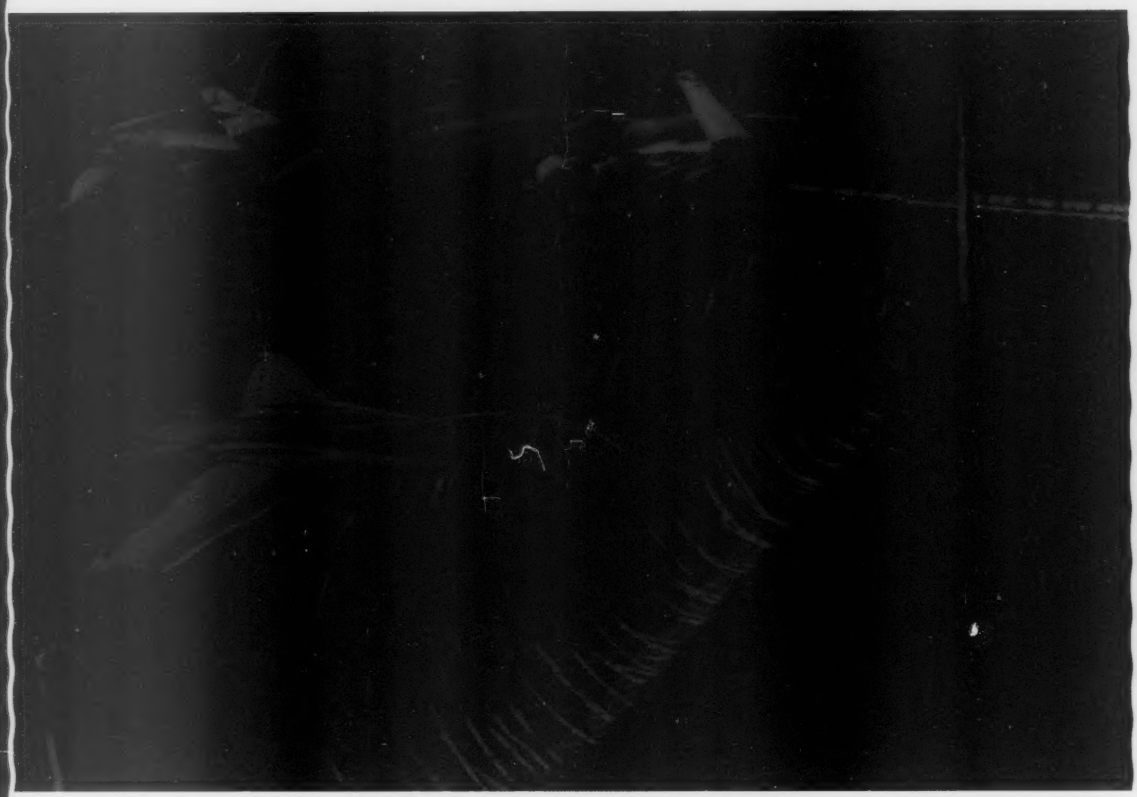
At that moment, time seemed to take another turn, this time into fast motion. The OOD on the bridge immediately turned the ship to use the relative wind to direct the flames away from the flight deck and marked the plane's crash site by ordering strobe lights into the water. The plane-guard helo began looking for the aircrew and reported that its hoist wasn't working, so the OOD radioed a plane-guard ship into position 500 yards on a relative bearing 180 from the strobes. The crash crew attacked the fireball, extinguishing the flames in less than 30 seconds—it was amazing to see them work so efficiently, dousing the huge flames. The 5MC loudly transmitted instructions to the flight deck personnel and the crash alarms were blaring. We got busy preparing to recover the remaining aircraft.

I looked down into the ocean, which should have been pitch black but instead was twinkling with strobe lights. I wondered if we had suffered mass casualties on the bow and if the strobe lights were from people who had been blown overboard from the explosions. I pulled out the spotlight stowed in the platform and scanned the huge swells. After a few cycles, I spotted a man waving at me—it was the RIO. I trained the spotlight on him, but he soon drifted out of range, waving at me as he faded to black. I radioed the helo and they began a hover over the general area.

The radios were alive with commands from the LSOs and tower while CATCC gave the "max conserve" call to the remaining airborne aircraft. Suddenly, the calls were interrupted by a faint voice over Guard, something like, "I'm cold, I'm cold…I'm OK, but I'm cold!" It was the voice of the Tomcat pilot! I was elated that he had survived, but given the water temperature, we knew he wouldn't last long. The folks on the bridge kept him talking on the radio in hopes of preventing him from giving up or blacking out. We had no idea where he could be in the

multitude of strobe lights. The helo hovered over each light to find survivors.

Once the fire was extinguished, the air boss ordered a quick, combat-FOD walkdown while the crash-and-salvage crew cleared the big pieces of debris. Soon we were landing Tomcats, Prowlers and Corsairs that were all low on gas. A remaining Tomcat had been sent



to the tanker while the helo continued to look feverishly in the icy waters for the aircrew and others. After several minutes, the Boss reported the RIO had been plucked from the ocean by the plane-guard ship. He had drifted into its cargo nets.

Soon, the helo crew found the pilot. The sea was so rough the SAR swimmer dared not jump in after the pilot, lest he become a victim himself. Instead, he elected to stay attached to the winch cable and try to snatch the pilot. We later learned each time the swimmer was dipped into the sea trying to reach the pilot, he absorbed thousands of volts of static electricity. The amperage was low enough not to be fatal, but the jolts were strong enough to make him convulse and lose control of his bowels. Nevertheless, he pressed on to save the pilot. Finally, after several attempts and the helo well into its red-light fuel, the swimmer connected the pilot and began their ascent. Halfway up, the cable snapped, sending swimmer and pilot into the frigid waters below. The helo pilot, all the while lacking auto-hover trim, skillfully kept the helo overhead while his crew quickly made an emergency splice on the cable. It would be their last chance. The helo pilot radioed that he had less than 10 minutes of fuel remaining, and the frigid waters continued their deadly assault on the pilot.

While the remaining aircraft finished landing, it became evident the pilot of the airborne Tomcat was having major problems getting into the refueling basket. After several more attempts, the word "uncle" was sounded, and the boss called, "Rig the barricade!" on the 5MC. We gazed at one another, with mouths agape. We rigged the barricade, looked up the recovery numbers, and completed the nine line brief. In the meantime, the helo finally snatched the swimmer and pilot to safety and hustled back to the carrier, landing on fumes. (The other plane guard helo had gone down in the chocks.)

In preparation for landing, the Tomcat pilot pickled a bomb, and all was ready. We sensed

we were getting the upper hand on the situation, and our confidence soared after the Tomcat pilot flew a flawless pass into the barricade—the first night Tomcat barricade in history. As the engines wound down on the entangled F-14, the flight deck became relatively quiet. The roar of cheers from below decks slowly replaced the roar from the jet engines. It was as if someone had scored the last second, game-winning Super Bowl touchdown (everyone had been watching the melee on the PLAT).

The 19MC sounded once again with the friendly voice of the boss. He warned us to standby to *re-rig* the barricade because the remaining aircraft, the tanker, was really low on gas (he had given his comfort fuel to his buds). CAG paddles recommended and received permission to lip-lock the Intruder pilot for one pass– a much safer proposition than flying into the barricade. He flew a beautiful pass into an OK one-wire, and the recovery was over. The plane captain was being treated at medical; the RIO was drinking hot coffee on the small-boy; the fires had been extinguished; and the Tomcat pilot was in the infirmary getting better acquainted with Jesus.

There had been no mass casualties on the flight deck, thanks to the quick reaction by the crash crewmen. The strobe lights I'd seen in the water were a result of well-meaning attempts to mark the position of the aircrew. The pilot apparently ejected just forward of the bow and below flight-deck level at approximately 85 degrees angle-of-bank. A drag chute may have slowed him before he hit the water, but we never figured out how he had survived after ejecting so far out of the envelope.

In just one recovery, we had executed procedures to handle a crash on the flight deck, mass casualties, fire on the flight deck, men overboard, search and rescues, and a barricade.

I learned some major lessons about my chosen vocation that night:

- The downed Tomcat crew nearly froze to death because they had opted not to wear exposure suits, which were extremely uncomfortable and cumbersome.
- Given the pilot's performance on the pass that produced the crash, perhaps the wave-off lights should have come on at the start or in the middle.
- Throwing extra strobes into the water slowed the SAR helo's ability to quickly find the downed aircrew.

SOP, a great job by the guys on the bridge and in the plane-guard ship, and the unwavering efforts of the helo crew helped save lives that night. The only real injuries were the plane captain's heels and a hairline fracture to the Tomcat pilot's leg. A Tomcat and a tanker were destroyed, the cost of learning to do business better.

That night, I went below decks feeling extremely proud of my shipmates and air wing for having done so well. Fifteen years later, I smile and recollect that night every time I hear a shipmate bellyache about being nabbed to man a fire hose, parade to the ready room for man-overboard muster, suck rubber during GQ, or help rig the barricade.

Drills, drills, drills. Maybe no one on their death bed ever wished they'd spent more time at the office. But I guarantee that no aviator who has ever had an emergency ever wished they had done fewer drills.

Cdr. May went on to become a CAG LSO and Force LSO and is now commanding officer of VAW-113.

The seat rockets propelled him at a sixty degree angle-of-bank, blasting him over parked aircraft and into the blackness...

Right to Right, I

by Ltjg. Ryan Bernacchi

Two weeks after leaving the FRS at Lemoore, I was scheduled for my first night flight in my new squadron. We went out to the area for a target-acquisition and attack hop that was mostly aimed at gaining some experience with the FLIR. It was a dark night with no moon, but I felt comfortable because I had recently flown at night for CQ.

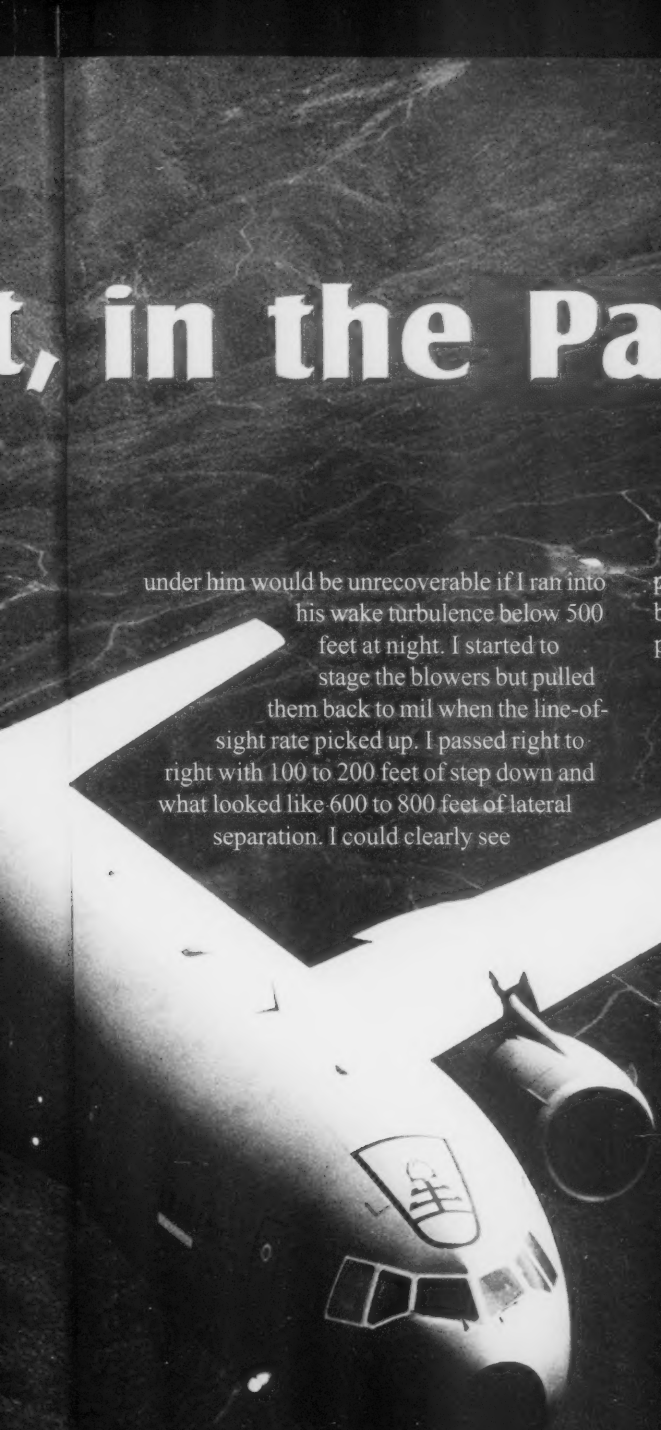
With the tactical part of the flight complete, we headed back to base for what I expected to be a routine night arrival. As we approached the initial, approach called out traffic, a KC-10 on a 10-mile GCA base. My lead and I both saw the tanker as we descended for the break. At this time, the only other jet in the pattern was a Hornet on downwind. The Hornet pilot had declared min-fuel and asked tower, "Wave off the heavy."

Tower responded, "Keep it coming and I will wave him off if I need to."

We broke and rolled out on downwind. As I rolled out, I noticed the very bright landing lights of the KC-10 on GCA final. I reached for the gear and flaps and started down from 1,500 feet to 600 feet. The KC-10 appeared to be lower than my altitude in a shallow, climbing, left-hand turn, and a mile or so away. I was still descending to pattern altitude and running through the landing checklist when another check of the tanker showed it had gotten bigger, and its aspect hadn't changed. It was the textbook constant-bearing-decreasing-range scenario. I figured he must be above pattern altitude on the missed approach, so I pushed forward to increase my rate of descent toward the farm fields invisible in the darkness below. I tried to get down as fast as I could, bringing my comfort level past the breaking point. The lights were getting bigger and brighter and were co-altitude as I reached 600 feet.

My lead urgently called on the back radio, "Look out, Two, he's coming right for you! Climb if you can!" At this point, I reached the abeam position and tower chimed in to clear me to land number three behind two Hornets (the min fuel and my lead). It was clear to me that the rapidly approaching lights coming for me were no illusion. I went to mil power and rolled left into a 50-to-55-degree AOB turn toward the runway. It didn't look like I could go above him, and I was worried that going

t, in the Pattern



under him would be unrecoverable if I ran into his wake turbulence below 500 feet at night. I started to stage the blowers but pulled them back to mil when the line-of-sight rate picked up. I passed right to right with 100 to 200 feet of step down and what looked like 600 to 800 feet of lateral separation. I could clearly see his engine nacelles, fuselage, wings and tail in the dark.

As soon as I was clear, the next problem was my lead. I was headed about 60 degrees off downwind heading and accelerating past 210 knots, which put me in position to cut off my lead at the 90 in a matter of seconds. An aggressive cut back to the right and a large power reduction got me out of lead's way and back into something resembling the landing pattern. I called tower to let them know they had just vectored a KC-10 right over me and confirmed that I was now number two to land, since I only had one other FA-18 in sight. An uneventful landing followed.

The subsequent phone calls to the tower revealed that approach, for the purposes of training a controller, had given the KC-10 an IFR, simulated-emergency break-off. This maneuver entails an immediate climbing left turn, instead of the straight-ahead climb followed by the crosswind turn. The tanker's rate of climb and turn radius from the missed approach point brought it directly through the VFR landing pattern.

The controllers and I learned many lessons. First, my lead's high SA and crew coordination over the back radio were key to helping me confirm what my eyes were seeing, which in turn allowed me to act aggressively. Second, controllers normally do a great job, but you cannot blindly trust them to keep you separated from aircraft or the ground. Third, even though most of my recent night experience was in the night landing pattern at home field and only two other planes were in the pattern, takeoffs and landings remain some of the most dangerous parts of flight.

Lt. Bernacchi flies with VFA-113

...″Look out, Two, he's coming right for you! Climb if you can!″

Trouble in

by LCdr. Bryan Dickerson

Recently, a friend of mine who was a CAG LSO waved a recovery in which a Hornet trapped with the wave-off lights on. The Hornet was working a little high start to in the middle and then the bottom fell out. Three hard power calls and two waveoff calls later, the Hornet crossed the ramp in burner with about 2 feet of hook to ramp and taxied into the ace. My buddy was astounded to learn that the pilot of this heinous pass was none other than the squadron CO, a well-respected ball flyer.

The debrief went something like this: "Uh, hi, sir. What happened out there?"

"What do you mean what happened out there? I should be asking you. I didn't get a single call out of you guys until I started to settle in the middle. I thought you guys were supposed to be there for us when we had a problem."

"What kind of a problem did you have, sir?"

"I was single-engine, you [insert slur of choice]!"

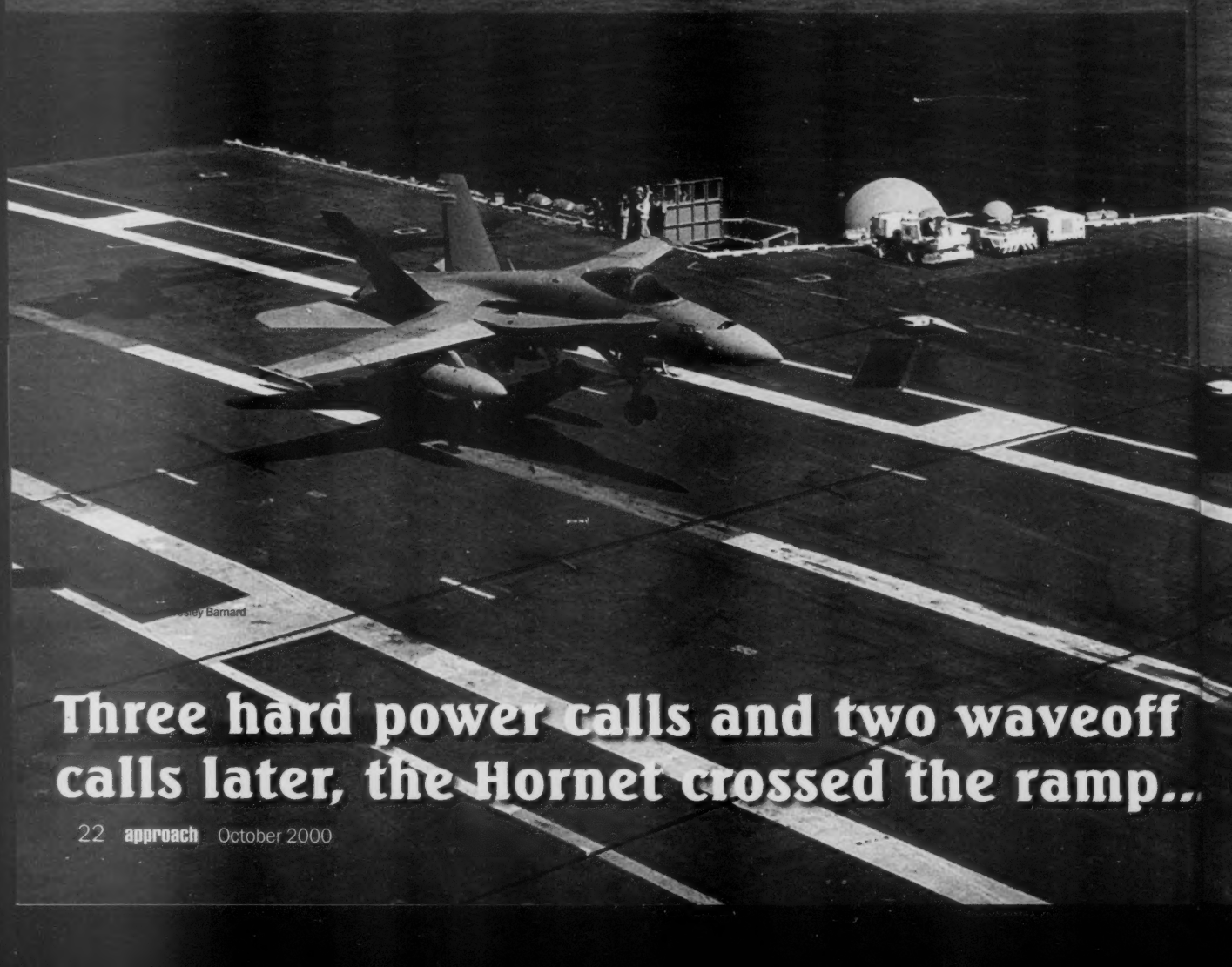


Photo by Wesley Barnard

Three hard power calls and two waveoff calls later, the Hornet crossed the ramp...

n Paradise

That was the first time the CAG LSO heard that the Hornet was a single-engine.

When something goes wrong around the ship, you get plenty of help when you need it, and even more when you don't. In flight school, we were taught that in an emergency, the pilot runs the show. You tell ATC where you want to go and what you want to do, and everyone works to make it happen. Around the big gray floating hotel, however, you aren't the only person looking to land on the duty runway. All the players have to exchange information in order to safely get aboard and get that slider.

Regardless of aircraft type, CAG Paddles and others on the ship need certain kinds of info to manage the risk of bringing broken aircraft (or broken people) back aboard. Thanks to an aggressive CAG LSO cross-training program implemented by CNAL and CNAP, most CAG Paddles now bring much more to aircraft knowledge to any platform than they did in the past. [illegible] than average chance that at least one of your CAG LSOs is NATOPS-qualified in your type aircraft.

In any emergency, once you are sure you're staying airborne, establish comms with the ship, get your squadron representative on the line, and let him know what is going on. One of the biggest causes of confusion on a ship is poor communication. Do your part to eliminate poor communication by eliminating the middle man. The OS1 sitting at the Strike console in CDC may be the best OS in the Navy, but he knows a lot less about the aircraft than your representative; the chance your info will be accurately passed along is low.

Talk to a rep. Your rep will pass on significant information to the heavies and the first major decision will be made for you: where to land. Per CV NATOPS, the CV or CVN commanding officer has the sole responsibility for the decision to divert or recover aircraft. Others that are often included in the decision-making process include the battle-group commander, CAG, the squadron CO, the air boss, the air ops officer, the CAG LSO, and the handler.

If the decision is to divert, press on, good luck, and give us a call when you're on deck. If the decision is to come back to the ship, be ready to provide specific information, including gross weight on the ball, predicted approach speed, current aircraft configuration, and current load.

Gross weight on the ball and predicted approach speed. They will dictate how much wind will be required to recover you and what weight setting will be used on the arresting gear or barricade engines. When the Air Boss or CAG Paddles asks you what your approach speed is going to be, they are asking about your current situation, not a book value. Do a slow-flight check

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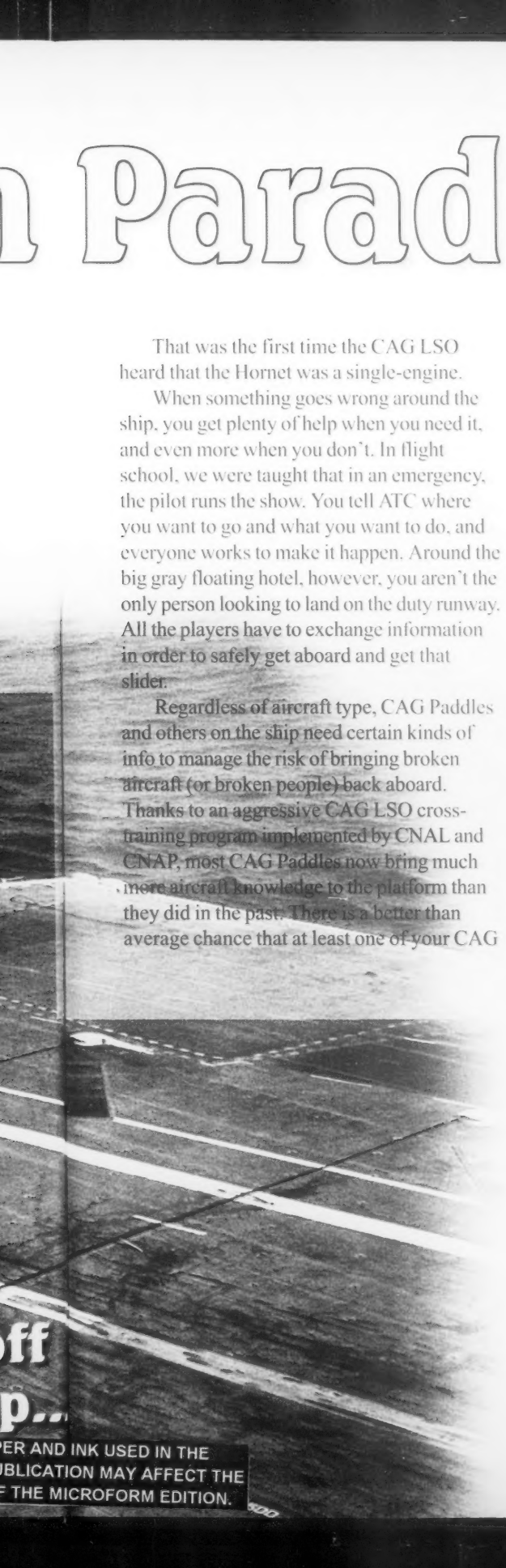


in accordance with your NATOPS procedures and report the results. Remember to subtract for fuel burned between the slow-flight check and the actual approach.

Current configuration. If different than normal, it may dictate a change in the lens setting for your approach. Paddles also needs to know what to expect when he sees you on the way down the chute.

What is loaded on the aircraft. Don't assume everyone will know. Be clear and specific about what is on each station. If a selective jettison is necessary, asymmetric loads and CG issues may come into play—math your rep can do for you.

While you are setting up for your approach, a lot of decisions are being made and a lot of numbers are being crunched. Both the LSOs and the guys in the air department are checking and comparing approach numbers in the Aircraft Recovery Bulletins. From the ARBs, the landing weight and approach speeds are used to set proper arresting-gear engine weights (not necessarily the same as actual landing weight) and lens settings. Required wind over the deck is being computed and, if necessary, more neutrons are being shoveled into the reactor to get the ship up to speed. If your problem calls for stripped cross-deck pendants (a fancy term for wires) or a barricade rig, that is also being prepared. In the case of the latter, all other aircraft must get down on the deck first.

Some problems may require a fly-by or visual inspection from another aircraft. This is always good for assessing any problems that may not be apparent to the pilot from inside the cockpit. LSO NATOPS requires a waveoff and visual inspection of aircraft without an approach light. Is it your squadron's SOP to check approach lights before launching for a night recovery?

With most aircraft, a tow-link warning also requires a visual inspection. One note about visual inspections: it is impossible to visually confirm that the gear is down and locked, or that a tow-link is up and locked. Never use a visual inspection as the sole confirmation that you are safe to land when you have abnormal indications about gear or the tow link. With today's landing gear that folds up like an origami swan, the only thing that can be confirmed is that something is definitely wrong. There have been cases where gear that "appeared" down have collapsed and tow links that "appeared" up have come down when the nosewheel hit the deck.

Air bosses, air ops officers, and, particularly, landing signal officers need to know some basic things about each aircraft and what each aircraft specific emergency means. Ask a Hummer pilot what it means when a Hornet is standby or no HUD and they will probably say, "It means they have to fly a pass like the rest of us for once." Ask a Hornet pilot what it means when an E-2 is pitchlocked and they will probably say, "I don't know—it's a prop thing." But an LSO had better know the significance of both emergencies.

Finally, although there are probably 10 different ways to communicate between any two positions on the ship, there is always the chance that someone did not get the word—much like with my buddy at the beginning of this story. Make sure every time you change frequencies, you let your new controller know what is going on. "Five-Zero-Five checking in Angels two, state six-zero, single engine" should tell the controller all he needs to know. Make sure you restate any problems on the ball so there is no confusion about which aircraft has the problem.

LCdr. Dickerson is a reserve E-2 pilot flying with VAW-78 at NAS Norfolk. A former CVW-1 LSO, he is currently serving as the CVW LSO for CVWR-20, the reserve carrier air wing.

"A Harrier in the..." continued from page 10

More importantly, I had been able to maintain reasonable control of my jet.

Risk management time: I still had a valid ejection option; I was in ideal parameters, but that's always a gamble, even strapped to Martin-Baker's finest. Or, I could try to land this thing before I ran out of fuel, another area quickly becoming a concern for all.

After a quick discussion with my wingman, we decided to go for it. Before starting my descent, it was important I decide what deviations I would accept during the recovery phase before I had to pull the handle. I had to be prepared and couldn't let myself get out of the ejection envelope during the in-close-to-touchdown portion of the recovery.

We set up for a long, visual straight-in approach, descended through the overcast deck, and began picking our way around the numerous villages in the area. I was on an 8 mile final, field in sight, still rolling around like a top-heavy dump truck, when tower reported winds 90 degrees off at 15 to 20 knots.

"Great," I thought.

At three miles, the surface winds provided an unwanted diversion as I fought to keep my wings level. I reached for the ejection-seat handle twice. Over the ramp, one last big rudder correction, and I was home. I waved to the many well-wishers who had come outside to watch the Yank crash. They have the same witness rules regarding mishap investigations we do.

I taxied to the line, trying to look relaxed as I poured myself out of the cockpit to accept the thanks of a grateful maintenance officer for not leaving one of his precious jets in the Bristol Channel.

Three salient points I feel are worth mentioning. I was glad my wingman was with me. People were getting excited on the ground, and he filtered out extraneous calls. Also, I was certain, with his backing, that we had explored every possible option systematically and thoroughly. His assistance was a large factor in my ultimate decision to try a landing.

Risk management. Racing through your ORM checklist as you listen to your outbrief is not the way to do it. Military flying is dangerous, and it requires a constant assessment of rapidly changing environments. When the parameters of your flight change, you must be able to quickly reassess your situation and adjust your decision processes accordingly. Waiting to see what happens next is a recipe for disaster.

> At least the Navy won't have to explain why one of their jets wiped out an entire village.

Flight skills and envelope expansion. Rules are great; they are everywhere and usually for good reason, but do we let our desire to fly in the center of the box stifle our growth as aviators? I found the British attitude toward expanding envelopes refreshing, and in my case, a real lifesaver. This doesn't mean I propose we all start flying down runways inverted at 200 feet, but when was the last time you practiced a HUD-out approach in your aircraft, a single-engine failure or explored the published performance envelope of your type and model series?

We tend to get wrapped around the axle with tactics while letting basic flying skills degrade. It's a tough balance to maintain, but I'm here to tell you that when things go wrong, your piloting skills, knowledge of your aircraft and ability to think on your feet are what will get you back to the barn in one piece.

Maj. Parkhurst now flies with VMA-513.

Photo composite by Patricia Eaton

The Fine Line Betw Can-Do and St

by Lt. Dan Moritsch

We've all read the mishap reports and heard briefs about causal factors of mishaps. Some of us have survived brushes with death and told our stories. We all know that a chain of events leads to a mishap. The hard part is recognizing those links before disaster strikes.

My chain started out one evening while we were shore-based on deployment. It was our last day of flying before going to the boat for a short underway period. I was a young Helicopter Aircraft Commander (HAC) flying with our new OinC for some day-into-night, deck-landing qualifications (DLQ). We were trying to get him current for ship landings. He had recently arrived in Japan to relieve our first OinC, who was going home because of medical problems. You can almost see the ORM points climbing, can't you? I knew it, and we briefed the risks involved.

Our detachment hadn't seen much underway time during work-ups or the two months that we had been deployed. Consequently, we only had two LSOs for a two-plane detachment, and I was one of them. Our three younger pilots had not had enough sea time yet

to become LSOs. This meant we needed to get the OinC qualified so he could fly on, and our other HAC could be the LSO and land us on the ship when it got underway. Looking back, there's the first link in the chain: perceived pressure to get the X so we didn't have to go through the administrative hassle of getting a waiver to have the OinC fly on without being DLQ current.

As luck would have it, we found some gripes on preflight that delayed us and kept us from launching on time. We weren't worried. The squadron where we were shore-based had a helo going out for the same deck period, and if our helo wasn't going to fly, our boss was going to ride out with them. However, our playmate went hard down, and we had to take our host squadron's LSO on our aircraft. We were racing sunset. Link number two.

Our squadron SOP states that in order to do night landings on the ship, a HAC must have made at least one landing on a ship during the day within the last 30 days. I was at 31 days. We finally got our aircraft ready to go and launched about 20 minutes before sunset.

tween Stupid

We were hoping the ship would be right off shore, since they were only out for one night. Of course, it wasn't. Shortly after takeoff, I tuned up their TACAN, only to find them more than 50 miles away. We lowered the nose, raised the collective, and tried to beat the darkness. Link number three in the chain.

We hustled out to the ship as fast as we could, skirting the ceiling the whole way just trying to maintain comms. After giving the ship our position and telling them we were inbound to drop off the LSO, we expected a green deck upon arrival. I don't know why I expected that, since nothing else throughout the flight had gone as planned. Sure enough, we had to wait for the ship to complete deck preparations prior to getting a green deck. By now, we were well past official sunset, and I was starting to think about sitting at the lonely end of a long table trying to explain to the mishap board why I didn't call it a night and go back home. Just as I was about to speak up and question the necessity of this flight, the call came over the radio that we had a green deck.

Rolling final, I noticed that lightning off in the distance was sporadically illuminating the darkness of the moonless night. Once over the deck, I realized that the approaching storm was going to make it a challenging night for DLQs. With winds on the edge of the envelope (and occasionally gusting outside it), a solid cloud layer, and an unfriendly sea, I landed and dropped off the LSO. Soon we were on our way to finally start our deck period. So much for the gentle, day-into-night transition for my OinC. Another link.

Once over the deck, I realized that the approaching storm was going to make it a challenging night for DLQs.

We had some time while the LSO got the deck ready, so we discussed how everyone was feeling about what we were doing—probably our one shining moment for the flight. Everyone said they were comfortable with what we were doing, and we agreed that if the approaches were uncomfortable, we would knock it off for the night. However, I was skeptical. I was a fairly new HAC, our crewman was the junior crewman on the detachment, and the OinC hadn't landed on a ship in three months.

Well, I thought, at least we were the only helicopter in the pattern, and we only needed to get the minimum number of landings for my copilot. It shouldn't take too long. Sure enough, the rapid securing device (RSD) on the deck was not cooperating, and we had to get a troubleshooter to look at it. After an hour of loitering behind the ship, we were once again cleared to land.

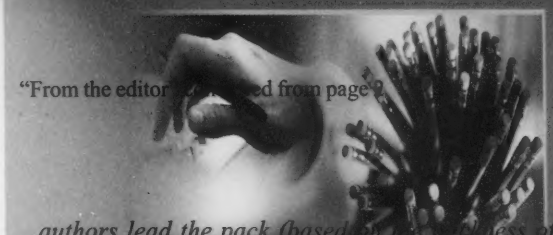
The deck was pitching and rolling, and the starboard winds made it very challenging over the deck. After battling the elements for about an hour, we finally got the minimum number of landings and were picking up the LSO to return home. It wasn't going to be a leisurely stroll, because we had to make it before the field closed. Again, we lowered the nose and raised the collective. After dodging clouds all

the way back, we landed about five minutes before the field closed.

I was glad to be back on land, but I wasn't comfortable with what had just happened. As the aircraft commander, I am responsible for the safe, orderly conduct of the flight and the well-being of my crew. I had just taken unnecessary risks that endangered all of us. How had I let that happen? Did we really need to get those boat quals that night? No, we didn't. I never felt in grave danger, but things could certainly have turned out differently. Our job is dangerous enough, and we must take positive steps to reduce risk. It's easy to armchair-quarterback this flight and say we should have gone home early or maybe not even gone at all. Aircraft problems, sunset, new OinC, junior crew, and bad weather all dramatically increased the risks for our flight.

As I said at the beginning of this article, the hard part is recognizing the links as they are being forged and connected. There's a fine line between can-do and stupid. The risks gradually escalate. They can be almost imperceptible if you're distracted with other cockpit duties or trying too hard to accomplish the mission. Some decisions, such as those guided by SOP, are purposely made before you strap on the aircraft so they won't be skewed in the heat of the moment. This flight was a learning experience for me. My new motto: "Break the chain before you break the plane."

Lt. Moritsch flies with HSL-49



"From the editor ... ed from page 2

authors lead the pack (based on the thickness of the folders containing pending articles), with the FA-18 and SH-60 only slightly behind. Keep it up! And if you fly another aircraft and have a burning desire to get into print, the field is wide open.

***Timeframes**: It probably isn't apparent to most readers, but we're printing articles much more expeditiously these days, rather than letting them languish around in editorial limbo for a year or three. I hope, for the authors at least, that this makes the experience of writing articles more enjoyable. It also means that our postcards don't come back stamped "Who the heck is that?" quite so often, because authors have moved on to new commands.*

***On the web**: We're trying out some new formats for back issues on our web site. We've posted entire issues and individual articles PDF files (readable using Adobe Acrobat), and (for the July and August issues) both the entire issue and each article as HTML (which means you don't have to call up Acrobat when you download and read the article). If one of these formats is more useful, let us know.*

***Query:** If there's anything else we can put on the site that will make your job easier, we'll be glad to look into it. We've been considering an on-line archive of unpublished articles, perhaps filed by topic (aircraft type, ACM, crew coordination, weather, headwork, survival, near-midairs). The articles would have to be posted unedited (the authors might actually like that aspect), but they'd be useful if you're doing research for a stand-down or for a new type of tasking.*

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I Get It—You're in a Hurry

by Lt. Christopher P. Smith

The day's flying had been, without a doubt, some of the best of my short career. We'd completed some great training, including day VFR and IFR, which got us back into the charts and pubs. We also got to see historic sites in New York and D.C., places us guys down in Florida don't see too often—without the bumper-to-bumper hassle of upper East Coast traffic.

We finally landed at Chambers Field in Norfolk after completing night VFR and night IFR training, but we returned a bit later than originally planned. Although we called earlier to update our expected landing time, our OinC was waiting for us in the line area. He wanted a hot-seat for one more bag before securing the aircraft for the night. He actually taxied us into the spot for the crew swap. From his anxious appearance, I commented that he must be in quite a hurry to jump in.

As I completed post-landing checks, one of the pages on my pocket checklist came loose. I stuck it back in the book and made a mental note to reinforce it later. There wasn't much risk of the door blowing open at taxi speed, so I placed the checklist on the floor closest to the door as I began to clean up the cockpit in preparation for the crew swap.

Soon the brakes were on, and I noticed my OinC already standing by my door ready to jump. I grabbed the last few items and stuffed the charts the next crew would not be using back into the nav bag. I heard that increase in noise indicating the door had been cracked opened. I turned back to see my door handle up in the unlocked position and my OinC holding the door partly closed.

Now I knew he was really in a hurry. Being the new guy, I am sure I was so slow it was painful for him to watch. Finished with the cockpit, I started to loosen my straps. I looked down at my pocket checklist, and I figured I would just grab it as I stepped out since he was in such a hurry. As I finished turning the lock-on buckle, he opened the door. I grabbed the upper door frame to pull myself out of the aircraft so as not to hold him up much longer.

Then I saw the page from my checklist flutter, right to left, past my front window as I was looking out. My OinC, reacting instinctively, slammed the door to prevent more FOD from escaping from the aircraft.

There I sat, looking at my fingers twitching—on the other side of the window. As I turned to yell, "Could you please open the door? You've closed it on my hand," I noticed the upper corner of the door was touching the airframe. He had actually bent the door around my hand. I didn't feel much pain, but after he opened the door and I deftly extracted my hand, I noticed the rapid onset of acute throbbing. The other pilot later remarked that as he turned to the left to follow the departure of my fast moving page, he turned back to see me rocking back and forth in my seat holding my hand. Not to hold up my OinC any longer (since I had already learned my lesson), I gathered my items with my good hand and climbed out. I think he asked me if I was OK as he practically crawled over me into the cockpit.

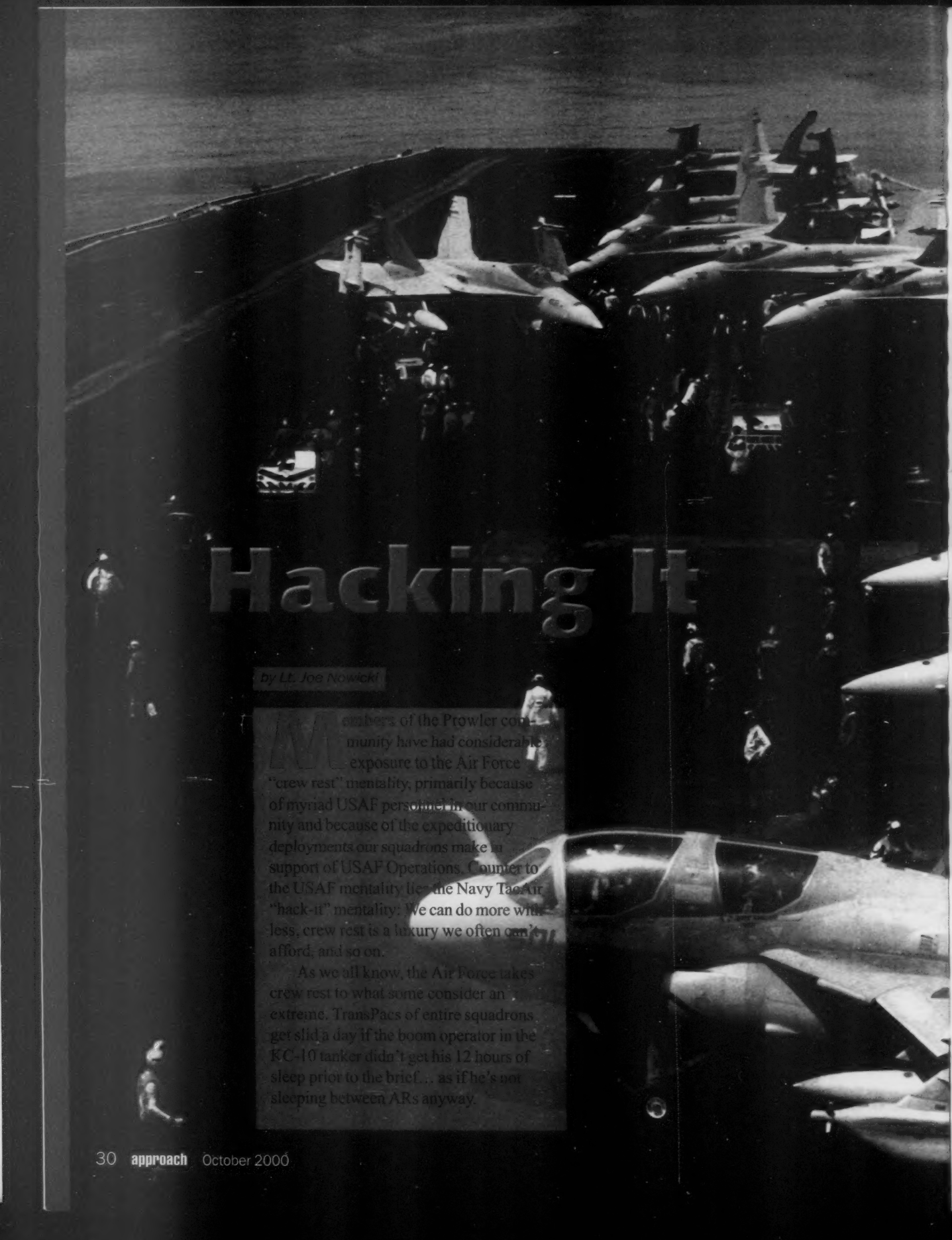
Once off the flight line, I removed my glove. I was surprised to see no compound fractures or blunt trauma. I walked away with a neat pattern of scabs after a day and, although sore for the better part of a week, my hand was FMC.

We debriefed the events later. True to OinC form, he kept trying to convince me it was my fault my hand was nearly crushed.

Lessons learned? I hobbled away with plenty. First, I'm sure glad for those gloves. I wear them all the time: over water, over land, and especially when hot seating to my OinC. They kept me from getting cut up. Next, gear adrift can easily become FOD—especially in a helicopter where you open a door under a turning rotorhead. Finally, when we talk about crew coordination, we are usually talking about the actual flight regime. However, it involves all elements of aviation operations. We certainly could have done better. I could have given a "hold" signal at the sound of the door opening if I wasn't ready. Possibly—I don't know, I might be reaching—my OinC could have waited until I opened the door, signaling my readiness to deplane.

Lack of crew coordination sure can get you in a pinch.

Lt. Smith flies with HSL-42



Hacking It

by Lt. Joe Nowicki

All members of the Prowler community have had considerable exposure to the Air Force "crew rest" mentality, primarily because of myriad USAF personnel in our community and because of the expeditionary deployments our squadrons make in support of USAF Operations. Counter to the USAF mentality lies the Navy TacAir "hack-it" mentality: We can do more with less, crew rest is a luxury we often can't afford, and so on.

As we all know, the Air Force takes crew rest to what some consider an extreme. TransPacs of entire squadrons get slid a day if the boom operator in the KC-10 tanker didn't get his 12 hours of sleep prior to the brief... as if he's not sleeping between ARs anyway.

Many naval aviators, myself included, take a subtle pride in hacking it. Perhaps it's a product of the carrier-aviation identity that we take pride in. It may also exist because we don't want to take the ready-room ribbing that would come after bagging out of a hop for being tired. Or could it be a subconscious resistance to our brethren in the blue bus-driver uniforms, whom we might consider inferior or "weak"?

Nonetheless, naval aviators become accustomed to long days and short nights during work-up cycles and six-month cruises. Even while shore-based, we know the demands on crew rest are tested by the occasional push to burn up OPTAR, late-night FCLPs, frequent weekend coast-to-coast "extended training flights," and long watches as duty officer.

On one such occasion ashore, I found out the hard way that I didn't quite hack it. I stood the day portion of an uneventful SDO watch, and the next day's flight schedule (per NATOPS) allotted for me "at least eight hours of uninterrupted rest." The problem arose with an abnormally busy Friday night as SDO. Multiple incidents requiring my attention were capped off by bailing out a belligerent drunk at 0330.

After a full three and a half hours of sleep, I was up again dragging myself into the ready room for a 0730 functional-check-flight brief. I thought to myself, "I'm only the backseater, so I don't really need a full night's sleep, right? That eight hours of uninterrupted rest is a should, not a shall, right?" I was sure I could hack it, just like many times before. As fate would have it, the two cups of coffee I chugged at the beginning of the brief kept me from napping when we slid the takeoff for three hours for weather. So, I decided to bury myself in mind-numbing paperwork.

Finally, the weather broke, and we walked to the jet around 1200. I had skipped breakfast and never considered lunch or a snack. I quickly preflighted and strapped in for another routine flight, deprived of sleep, and malnourished (even by Navy standards).

After a full three and a half hours of sleep, I was up again dragging myself into the ready room for a 0730 functional-check-flight brief.

After starting engines and just prior to taxi, I noticed our most junior non-rated airman beside the aircraft observing his first launch. His seemingly random motions at me didn't resemble any hand signal I recognized. "What on earth is his problem?" I wondered. Finally, the light bulb, although dim, came on. In my groggy state, I had strapped in without unpinning the ejection seat.

I learned two very important lessons from this potentially hazardous incident. First, no matter who you are, you can't always hack as much as you think. Rules on crew rest are there for a reason. We can't afford to be at our worst when we climb into the jet. Second, I'll never again be so quick to discount the input of even the most junior maintainer. That young airman might have saved my tail that day.

Maybe those guys in blue are onto something.

Lt. Nowicki is an ECMO with VAQ-131.

by LCdr. Mike Worthington

Did I Do

The incident I'm about to describe could yield three *Approach* articles, even though it wasn't a mishap. Here's one of the articles. I'll have to write the others after I leave the service.

One of the dangers of operating from a small inland base, under busy Class B airspace, is conducting functional check flights (FCFs) without the benefit of a dedicated working area. Here at NAS Atlanta (a.k.a. Dobbins ARB), the entire FA-18 checkflight is conducted under positive control, using a triangular, 350-mile, point-to-point stereo route. The route is one-way with little time to re-check items or correct mistakes.

Considerable interaction with the ARTCC is the norm, as every altitude or course deviation must be requested. The good news is that there is no transit time to and from the working area, and no need to wait for scheduled airspace. The bad news is that a Pro-A (full system check), with all its detail, is intense; a possible violation or noise complaint hangs in the balance. Still, we've successfully flown hundreds of these flights.

Not long ago, during just such a flight, I confronted the dreaded, high-hour, been-there-done-that aviator disease. I had been at this station for three years and had flown the profile route more than 60 times. However, I'd been out of the cockpit for more than 60 days, and had recently only flown the simulator, a 1 v 0 and a low level. This would be my third flight. (Article #2: "Can Do! And the Trouble It Brings.")

As it happened, I wasn't scheduled for the flight. I was scheduled to fly a Profile C, a relatively simple flight, but that jet wasn't ready. The MO was going to fly the hangar queen (422 days of shelter) on its Profile A. The day was filling up for him with meetings, so I thought I would step up and help out, while putting his flight time in my logbook. We made the exchange in the passageway.

The plane was slick— no pylons, no tanks, a beautiful sight, rarely seen in the fleet. Both the fuel and drag were less than normal. I was confident I could do the whole profile with the benefit of the reduced drag.

The flight went as planned until I asked for the FL350-450 block from point B to point C for the supersonic checks. That leg must be flown over that specific path because it is the only approved supersonic route over the taxpayers below. That day Center was having a hard time, assigning me various vectors and slowly stepping me up. By the time I was assigned FL310, I had eaten up half the track. Still, with 50 miles left, I was back on the profile and could complete the check.

My bingo bug went off, and I moved it down from 6.0 to 4.5. It seemed I might be playing the fuel a little close. Just after having FL350 assigned, a FUEL LO caution illuminated. I looked at the fuel total again; the caution made no sense to me with this much fuel. Usually you won't see a FUEL LO until 2.5 or less. I quickly passed it off as an anomaly, attributable to the jet's long down time. My bucket was full, but I was finally in position to do the supersonic run, so I pressed.

Could I still squeak it out and coast back to base? I looked again and was surprised to see 4.5 total fuel. Had I used that much in the last 2,000 feet of climb? "I must be a ham fist!" I thought. I was just passing the point of the leg closest to my base, about 75 miles. I looked again to the fuel, this time it was 4.0! Bingo time.

I told Center I had a request and started leaning toward my base. When they came back, I changed my flight plan and headed back to base. By the time the verbal exchange was over, with the obligatory frequency change, I had 3.0 total fuel.

I was pointed in the right direction at FL350; I had on-deck fuel plus 1,000 pounds. I had very low drag and 75 miles to go. I also had to sneak under the nation's busiest

Class B airspace, but that didn't worry me too much, because my base was on the near side of the civilian airport.

The next moment, I actually saw the fuel indicator roll to 2900, then 2800. Now came a full dose of that feeling in the pit of my stomach...I declared an emergency and, looking down on this bright beautiful day, saw the Chattanooga airport 30,000 feet below. I declared my intention to land there.

Center quickly gave me FL220 and a turn back, direct. I went to idle, over-banked and worked my steep, arcing turn to line up with the long runway. I needed to lose the altitude and energy quickly, because I didn't want to pass by the long runway. My descent continued with another controller to 12,000 feet. I was given the tower frequency, and I asked how long the runway was.

My options were gone. I would land on this runway. Whatever its length, it was longer than any other within 75 miles. I had been at idle the entire descent, the engines hadn't hiccuped, and my only indications were the FUEL LO and BINGO cautions and a falling fuel-quantity gage.

At 5 miles and 3,000 feet, I was told the runway was 7,000 feet long, and with clearance to land, I did quick right and left 4G pulls to get below gear speed. On centerline, I finally looked at my feed-tank quantities and unhappily saw 000 in the left and 1200 in the right.

I decided to leave the left throttle at idle and set half flaps, expecting the engine to fail. I wanted to be in the correct single-engine configuration. Three green lights for the gear. I eased my sink rate with the right throttle and landed. It wasn't too hard to get off at the 2 board. When I taxied clear, I had 900 pounds in the right feed tank.

From the time I noticed the fuel quantity of 4.5 to touchdown, between 4 and 6 minutes had elapsed. I felt very busy the entire time and a little task-saturated.

Here's what I did:

- Successfully land. I had gone from FL350 to earth, through some of the least hospitable controlled airspace in the country.
- Adapt and change game plans at least twice, within a few moments, and accomplish one correctly.
- Plan for a single-engine landing ("proactive"—boy, was I proud of that!)

But here's what I didn't do:

- Correctly analyze the indications.
- Take my hands off the stick and throttles except to change frequencies, lower the gear and put the flaps down.
- Think of opening the PCL.
- Call to base for help.
- Read the boldface for "fuselage fuel leak." (Article #3: "Who's Got My Gas?").

Because that's what it had been—a fuselage fuel leak! It doesn't hit you over the head like a fire light, but there are indications for it. A fuel leak can occur without a wingman, even at night. I had always envisioned flying with a wingman who points out, "Hey, I think you've got a fuel leak!" In this case, rapid loss of fuel and that strange, out of place FUEL LO caution, when you know you shouldn't have one, was all that pointed to the procedure.

Maybe I'll submit a NATOPS change recommendation to change the title of the fuselage-fuel-leak procedure to "Rapid Loss of Fuel for No Apparent Reason." Always point the finger, I say.

And speaking of pointing fingers, had I tried to fly for another minute or two, the AMB or one of the endorsers would point to maintenance for the missing clamp, and to me for taking the varsity flight, and to me again for failing to follow procedures. I had succumbed to one of the major ORM no-no's, "Can do!" I just hadn't wanted to say that I couldn't fly the Profile A.

I had been so busy navigating and communicating that my unproficient brain had no time to analyze indications. There is more to the "aviate" part than stick and rudder. Proficiency means that when the bucket gets full, immediate action items don't spill over the side.

LCdr. Worthington flies with VFA-203 at NAS Atlanta.

Did I Do

by LCdr. Mike Worthington

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Not long ago, during just such a flight, I confronted the dreaded, high-hour, been-there-done-that aviator disease. I had been at this station for three years and had flown the profile route more than 60 times. However, I'd been out of the cockpit for more than 60 days, and had recently only flown the simulator, a 1 v 0 and a low level. This would be my third flight. (Article #2: "Can Do! And the Trouble It Brings.")

As it happened, I wasn't scheduled for the flight. I was scheduled to fly a Profile C, a relatively simple flight, but that jet wasn't ready. The MO was going to fly the hangar queen (422 days of shelter) on its Profile A. The day was filling up for him with meetings, so I thought I would step up and help out, while putting his flight time in my logbook. We made the exchange in the passageway.

The plane was slick— no pylons, no tanks, a beautiful sight, rarely seen in the fleet. Both the fuel and drag were less than normal. I was confident I could do the whole profile with the benefit of the reduced drag.

The flight went as planned until I asked for the FL350-450 block from point B to point C for the supersonic checks. That leg must be flown over that specific path because it is the only approved supersonic route over the taxpayers below. That day Center was having a hard time, assigning me various vectors and slowly stepping me up. By the time I was assigned FL310, I had eaten up half the track. Still, with 50 miles left, I was back on the profile and could complete the check.

My bingo bug went off, and I moved it down from 6.0 to 4.5. It seemed I might be playing the fuel a little close. Just after having FL350 assigned, a FUEL LO caution illuminated. I looked at the fuel total again; the caution made no sense to me with this much fuel. Usually you won't see a FUEL LO until 2.5 or less. I quickly passed it off as an anomaly, attributable to the jet's long down time. My bucket was full, but I was finally in position to do the supersonic run, so I pressed.

Could I still squeak it out and coast back to base? I looked again and was surprised to see 4.5 total fuel. Had I used that much in the last 2,000 feet of climb? "I must be a ham fist!" I thought. I was just passing the point of the leg closest to my base, about 75 miles. I looked again to the fuel, this time it was 4.0! Bingo time.

I told Center I had a request and started leaning toward my base. When they came back, I changed my flight plan and headed back to base. By the time the verbal exchange was over, with the obligatory frequency change, I had 3.0 total fuel.

I was pointed in the right direction at FL350; I had on-deck fuel plus 1,000 pounds. I had very low drag and 75 miles to go. I also had to sneak under the nation's busiest

Class B airspace, but that didn't worry me too much, because my base was on the near side of the civilian airport.

The next moment, I actually saw the fuel indicator roll to 2900, then 2800. Now came a full dose of that feeling in the pit of my stomach...I declared an emergency and, looking down on this bright beautiful day, saw the Chattanooga airport 30,000 feet below. I declared my intention to land there.

Center quickly gave me FL220 and a turn back, direct. I went to idle, over-banked and worked my steep, arcing turn to line up with the long runway. I needed to lose the altitude and energy quickly, because I didn't want to pass by the long runway. My descent continued with another controller to 12,000 feet. I was given the tower frequency, and I asked how long the runway was.

My options were gone. I would land on this runway. Whatever its length, it was longer than any other within 75 miles. I had been at idle the entire descent, the engines hadn't hiccuped, and my only indications were the FUEL LO and BINGO cautions and a falling fuel-quantity gage.

At 5 miles and 3,000 feet, I was told the runway was 7,000 feet long, and with clearance to land, I did quick right and left 4G pulls to get below gear speed. On centerline, I finally looked at my feed-tank quantities and unhappily saw 000 in the left and 1200 in the right.

I decided to leave the left throttle at idle and set half flaps, expecting the engine to fail. I wanted to be in the correct single-engine configuration. Three green lights for the gear. I eased my sink rate with the right throttle and landed. It wasn't too hard to get off at the 2 board. When I taxied clear, I had 900 pounds in the right feed tank.

From the time I noticed the fuel quantity of 4.5 to touchdown, between 4 and 6 minutes had elapsed. I felt very busy the entire time and a little task-saturated.

Here's what I did:

- Successfully land. I had gone from FL350 to earth, through some of the least hospitable controlled airspace in the country.
- Adapt and change game plans at least twice, within a few moments, and accomplish one correctly.
- Plan for a single-engine landing ("proactive"—boy, was I proud of that!)

But here's what I didn't do:

- Correctly analyze the indications.
- Take my hands off the stick and throttles except to change frequencies, lower the gear and put the flaps down.
- Think of opening the PCL.
- Call to base for help.
- Read the boldface for "fuselage fuel leak." (Article #3: "Who's Got My Gas?").

Because that's what it had been—a fuselage fuel leak! It doesn't hit you over the head like a fire light, but there are indications for it. A fuel leak can occur without a wingman, even at night. I had always envisioned flying with a wingman who points out, "Hey, I think you've got a fuel leak!" In this case, rapid loss of fuel and that strange, out of place FUEL LO caution, when you know you shouldn't have one, was all that pointed to the procedure.

Maybe I'll submit a NATOPS change recommendation to change the title of the fuselage-fuel-leak procedure to "Rapid Loss of Fuel for No Apparent Reason." Always point the finger, I say.

And speaking of pointing fingers, had I tried to fly for another minute or two, the AMB or one of the endorsers would point to maintenance for the missing clamp, and to me for taking the varsity flight, and to me again for failing to follow procedures. I had succumbed to one of the major ORM no-no's, "Can do!" I just hadn't wanted to say that I couldn't fly the Profile A.

I had been so busy navigating and communicating that my unproficient brain had no time to analyze indications. There is more to the "aviate" part than stick and rudder. Proficiency means that when the bucket gets full, immediate action items don't spill over the side.

LCdr. Worthington flies with VFA-203 at NAS Atlanta.


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Poster idea contributed by John W. Williams